TECHNOLOGY DEPT.

A National Newspaper for Every Branch of the Industry

Automotive Daily News

CARS · SHOP EQUIPMENT · TRUCKS · AVIATION · PARTS · ACCESSORIES · TIRES

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Competition, Taxes, Used Tire Problems Discussed at N.T.D.A. Atlanta Meeting

Urge Makers to Ban Trade Names on Bulk Seller's Tires; Used Tire Sales Held Needed at Present

Atlanta, Ga., Nov. 15.—Sale of tires by oil companies, the inauguration of a local association program for tire dealers, the handling of the used tire situation and Federal taxes as affecting tire dealers were some of the major points discussed by the National Tire Dealers' Association at its Tuesday morning session in Atlanta.

While it was generally felt that the sale of truck and automobile tires by oil companies was unfair competition, dealers also agreed that the evil could not be stopped by regulating and legislating.

One practical suggestion was that manufacturers allow tires to be sold to the oil companies under their name but not under the standard tire names. Probably the most practical suggestion offered was that tire dealers combat this evil by means of more thorough knowledge of tires and better business methods.

Secretary Trimborn presented the local association program as put into effect by the Dayton, Ohio, tire dealers as the best that he had encountered and the association asked that copies of this program be sent to dealers and associations interested to serve as a model for local programs during the coming year.

In the handling of the used tire situation a majority of the tire dealers reported that they were selling second and third tires for what they would bring and destroying those too used for safety by cutting off the bead. While some dealers wished to eliminate the sale of used tires entirely, a number reported that this would destroy the market for many tires, since many people at present could only afford seconds, and it was a better practice "to keep the cars rolling." It was generally felt that some arrangement by which manufacturers would take back used tires and keep them off any future market would be beneficial, but no practical suggestions were offered as to how this could be effected.

The association was urged to consider the possibilities of including tire inspection in the regular automobile inspection now required by several states. One dealer reported that following a misquoting of his state motor vehicle commissioner that in the future automobile tires would be inspected, the sale of tires at once increased materially.

The secretary of the national association was asked to prepare data

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EXPECT APPROVAL OF STORE DOOR RATES

New York, Nov. 16.—The railroads feel that they have now got the store door delivery and pick up tariff into good shape and that it will now pass the Interstate Commerce Commission, W. F. Richardson, freight manager of the Baltimore & Ohio Railroad, yesterday afternoon told a crowded "town" meeting of shippers and railroad men, held under the auspices of the Shippers' Conference of Greater New York at the Merchants' Association.

The tariff will be filed with the commission this week, it was stated. It is scheduled to go into effect December 17, after several postponements.

CAR OWNERS DENIED RIGHT TO REFUND ON LOWER FREIGHT RATES

Salt Lake City, Utah, Nov. 16.—The purchaser of an automobile from an automobile dealer cannot claim the refund for himself should freight rates on his machine be reduced after completion of the transaction, regardless of the fact that he understood that the price paid included a given amount for freight above the actual retail cost of the car. This was the verdict of the local United States District Court this week in the unique case brought into the courts here last summer, first into the state court and later transferred to the Federal court.

In behalf of from 4,000 to 5,000 purchasers of cars over a period of a few years it was claimed, it was argued that as a definite amount for freight is known to be included in the cost of an automobile, the purchaser has the right to any refund obtained through action of the I. C. C. if the carriers are ordered at any time to make one. In the case in question it was asserted that the refund amounted to from $20 to $40 a car.

For the defense, it was argued that the automobile dealer was in a similar position to any other merchant or dealer. He paid the freight

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N. Y.-PENNSYLVANIA PLANTS CONTINUE TRADE UPSWING

Buffalo, N. Y., Nov. 16.—With the results of the national election recording little or no effect, industrial activity in western New York and northwestern Pennsylvania continues the upward trend which has been noted since early in September. Throughout the bi-state area thousands of men have returned to near normal working schedules in a half dozen lines of industry, while other manufacturers are preparing to resume production or again start operations on a part-time scale before the end of the current year.

Obviously, the textile industry has shown the widest margin of improvement. This improvement continues to be further stimulated from week to week. In the southwestern corner of the state, at Jamestown, where the semi-annual fall furniture exposition is in swing, officials report that more new business was placed during the first week of the current exhibit than during the entire two weeks of the spring market. Buyers from sixteen states and Can-

(Continued on Page 10)

Automotive Employment Gains; Only Previous Workers Recalled

Detroit Authorities Warn Out of Town Unemployed To Remain at Home; No Additional Workers Needed at Present

Detroit, Nov. 16.—While no definite figures on employment in the Detroit district have been given out within the past few days, there has been a distinctly apparent upturn in this respect. Men are going back to work in a steady stream and while maximum employment will not reach the levels of 1928 and 1929, the pay roll factor in this territory will show definite improvement for some time to come.

In the General Motors family the greatest activity is noted at the Chevrolet and Buick plants. Chevrolet now has more than 8,000 men at work in its Flint plant. This company some weeks ago set a definite production schedule for November, December and January, the work to be distributed in such a way as to best serve the interests of the workers.

The Buick plant is humming with activity and while no employment figures have been given out, some hundreds of workers have been recalled to the colors by this company.

The Chrysler organization is taking on men rapidly. Plymouth and Dodge at the moment are the most active divisions, but the De Soto and Chrysler plants are getting ready to swing into action. This week will see about 21,000 men on the Chrysler pay rolls, with important additions to be made in the immediate future. It is certain that the total Chrysler employment will reach 35,000 men before very long.

Graham-Paige is adding men to its pay rolls and various other independent manufacturers are getting ready to swing into production with the inevitable return of workers to their jobs.

Reports received here indicate that the upward employment trend in other automotive manufacturing

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NEW FEDERAL BUREAU URGED TO REGULATE ALL TRANSPORTATION

Hot Springs, Ark., Nov. 16.—Creation of a new government agency, to be known as the Bureau of Transportation, for the purpose of extending Federal regulation over all forms of transportation, was proposed here today by Claude R. Porter, chairman of the Interstate Commerce Commission.

This bureau, as the plan was outlined by Chairman Porter, would function under the guidance of a single director and would be composed of the Interstate Commerce Commission, the Shipping Board and the Aeronautics Branch of the Department of Commerce.

The proposal was made in the course of an address before the annual convention of the National Association of Railroad and Utilities Commissioners, which began today.

Mr. Porter denied that the freeing of the railroads from much of the regulation that now surrounds them would be desirable.

A nation subjecting rail carriers engaged in interstate commerce to strict governmental regulation while exposing them to unrestricted and unregulated competition by motor carriers operating over the public highways was a situation cited as a "somewhat strange spectacle" by John J. Murphy of South Dakota, president of the National Association of Railroad and Utilities Commissioners, in his address before the convention.

FORD SHUTS TRACTOR PLANT IN IRELAND

Cork, Irish Free State, Nov. 16.—The Ford Motor Company decided today to close its great automobile and tractor factory here for an indefinite period.

More than $10,000,000 was spent on the plant, which was originally designed to meet most of the European demand for tractors. Henry Ford's wish to give a factory to his grandfather's county—Cork—prompted the scheme.

He had the European tractor plant moved here in 1928 and soon 7,000 workmen were employed at an average wage of £8 (then about $40) weekly. Despite the depression 2,000 still were employed today.

Much machinery was transferred recently to the plant in Dagenham, England. Local authorities hoped some Canadian Ford work would be shifted here to take advantage of lower wages in the Free State, but Mr. Ford decided to close the factory.

DODGE BROS. SALES GAINS 7.5% IN WEEK

Detroit, Nov. 16.—An increase in passenger car retail sales is reported by Dodge Brothers Corporation. Deliveries made by Dodge dealers during the week ended November 5 topped sales of the previous week by 7.5 per cent.

SUPREME COURT HEARS ARGUMENT IN CARRIER CASE

Washington, Nov. 16.—The controversy between several private contract motor carriers and the Railroad Commission of Texas over the validity of a Texas statute providing for regulation of common and contract motor carriers, classified by the statute as doing a business affected with a public interest, was heard by the Supreme Court of the United States, yesterday in an appeal brought to the high tribunal by the operators.

Counsel for the carriers in Stephenson et al. v. Bindford, et al., No. 326, attacked provisions of the statute as unconstitutional, and asked the Supreme Court to reverse a Federal district court decision which upheld the validity of the act and dismissed their bill seeking to restrain its enforcement.

Asserting that the appellants are private contract motor carriers, John H. Crooker, as one of their counsel, contended in his arguments before the court that the business of the appellants is one wholly unaffected with a public interest, and that the Legislature cannot by "mere legislative declaration convert such purely private business into one affected with a public interest."

SERVICE MEN HOLD CENTER OF STAGE AT B-O-P MEETING

Detroit, Nov. 16.—Service men held the stage at today's B-O-P meeting.

A. H. Bartsch, general parts and service manager, gave a presentation of the 1933 service, parts and accessory program, while other speakers on the morning program included L. K. Marshall of the products information section; C. W. Jacobs, assistant general service manager; A. R. Boscow, manager of the distribution section, and T. W. Moss, manager of the merchandising section.

In the afternoon ,M. J. O'Connor talked on dealer rent and lease control; H. E. Stearns on the anti-hoarding campaign, and A. C. Sloan on 1933 business management program. J. J. Schuman, president G. M. A. C.; C. E. Dawson, general manager of fleet sales, and J. P. Little, general sales manager of General Motors Truck, also talked. The service program will continue through Thursday and Friday.

ILLINOIS COMMERCE COMMISSION TRUCK HEARING SLATED DEC. 2

Chicago, Nov. 16.—Upon call of the Illinois Commerce Commission, a meeting of far reaching importance, to be attended by representatives of motor trucking, railroad and commercial interests generally, will be held in Chicago, December 2, at offices of the commision.

The session will gather primarily for purposes of solving, through a round-table conference, many of the problems of motor truck operation in Chicago and the metropolitan area. The general business interests will be represented by the Chicago Association of Commerce.

It is the hope that as a result of the meeting the existing differences between truck lines and railroads will be ironed out. By settling them it is felt that definite solution for all time may be better secured soon by the Illinois Commerce Commission itself in a formal hearing before that body.

PIERCE ARROW ADDS 2,000 MEN AT BUFFALO

Buffalo, N. Y., Nov. 16.—The Pierce Arrow Motor Car Company, a Studebaker subsidiary, announced today that 2,000 men had been put to work in the Buffalo plant producing a new line of Pierce Arrows.

1933 Plymouth Number One

Walter Chrysler and Fred Zeder congratulatingeach other and the world at large on the safe arrival of the new infant member of their automotive family, the Plymouth floating power six. The birth of this promising scion of the Chrysler family was first recorded in Automotive Daily News on November 2. The Plymouth in our picture is the first unit of the new model off the assembly line.

FINANCIAL NEWS

MURRAY CORPORATION

Detroit, Nov. 16.—Murray Corporation of America and subsidiaries report for nine months ended September 30 a net loss of $1,419,523, after depreciation, interest, etc. This compares with a net loss of $505,153 in the first nine months of the previous year. For the quarter ended September 30 the net loss was $293,106, after above charges, comparing with a net loss of $327,945 in the preceding quarter and a net loss of $534,288 in the September quarter of 1931.

FEDERAL SCREW

New York, Nov. 16.—Federal Screw Works and subsidiaries report for the nine months ended September 30 a net loss of $370,241, after interest, depreciation and taxes, comparing with a net loss of $174,890 in the first nine months of 1931. For the quarter ended September 30 the net loss was $131,481, after charges and taxes, against a net loss of $137,291 in the preceding quarter and a net loss of $109,178 in the September quarter of the previous year.

GENERAL ASPHALT

New York, Nov. 16.—General Asphalt and subsidiaries report for the twelve months ended September 30 a net loss of $630,462, after depreciation, taxes, etc., comparing with a net profit of $222,616, equal to 54 cents a share on 413,338 no-par shares of common stock in the twelve months ended September 30, 1931.

CURTISS-WRIGHT

New York, Nov. 16.—Curtiss-Wright and subsidiaries report for the quarter ended September 30 a net loss of $408,664, after depreciation, interest and other charges, comparing with a net loss of $269,655 in the preceding quarter and a net loss of $676,234 in the September quarter of the previous year. For the nine months ended September 30 the net loss was $376,306, after depreciation, interest, etc., against a net loss of $2,139,388 in the first nine months of 1931.

SOCONY-VACUUM

New York, Nov. 16.—Socony-Vacuum Corporation took the initiative yesterday in an advance of ½-cent a gallon in the price of gasoline throughout its marketing territory in New York and New England. The advance takes effect this morning and is expected to be followed by leading marketers. Both tank wagon and service station prices are concerned in the price change.

The increase is the second to be made in Eastern oil marketing territory in the last month. On October 20 Sinclair Refining Company, a subsidiary of Consolidated Oil Corporation, took the lead in posting a 1-cent advance on gasoline, which was followed by virtually all distributing companies in the Atlantic Seaboard states.

WRIGHT AERONAUTICAL

New York, Nov. 16.—Wright Aeronautical reports for the quarter ended September 30 a net loss of $218,312, after taxes, charges and depreciation. This compares with a net profit of $31,866, equal to 5 cents a share on 599,857 no-par shares of capital stock in the preceding quarter and a net profit of $293,736, or 49 cents a share, in the September quarter of the previous year. For the nine months ended September 30 the net profit was $148,278, after taxes and charges, equal to 24 cents a share on 599,857 shares, comparing with a net loss of $23,548 in the first nine months of 1931.

FAILURES

New York, Nov. 16.—There were 415 business failures during the week of November 10, or twenty-three less than the preceding week, reports Bradstreet's, whose adjusted index fell from 108.6 per cent. to 96.9 per cent. of the 1928-30 average. This is the lowest figure recorded this year. With but one execption, it is lower than in two years. With only four exceptions, it is less than at any date since the end of 1929.

The high point of the index for the depression was reached on August 4 of this year, when it stood at 171.5. Since then it has fallen almost steadily for fourteen weeks, to bring it to its present low point. No decline of this size or length has been recorded in the last three years, it was said.

OIL OUTPUT GAINS, IMPORTS DECLINE

New York, Nov. 16.—The American Petroleum Institute estimates that the daily average gross crude oil production for the week ended November 12, 1932, was 2,134,350 barrels. Daily production for the four weeks ended November 12 averaged 2,123,450 barrels.

Imports of petroleum at principal United States ports (crude and refined oils), for the week ended November 12, totaled 687,000 barrels, a daily average of 98,143 barrels, compared with a daily average of 106,000 barrels for the week ended November 5, and 103,214 barrels daily for the four weeks ended November 12.

U. S. PRESSED STEEL

Grand Rapids, Mich., Nov. 16.—Liabilities of $147,736.36 are listed in schedules filed in District Court here in the bankruptcy of the United States Pressed Steel Company of Kalamazoo. No assets are listed, but an accompanying note states that the assets were sold July 5 to the United States Pressed Steel Products Company with the provision that the unsecured creditors, to whom $144,986 is owing, are to be settled with at least 50 cents on the dollar.

STANLEY ELECTRIC SHOWS IMPROVED DRILL LINE IN DETROIT EXHIBIT

New Britain, Conn., Nov. 16.—The Stanley Electric Tool Company of New Britain, Conn., will exhibit their complete line of electric automotive tools at the Joint Trade Show. The exhibit will include electric drills, bench grinders, screw drivers, hole saws, wire brushes, disc sander, and unishears for cutting sheet metal.

A real improvement in electric drills will be shown for the first time. Built into the new drills is a stainless steel band, perforated, for use as a drill gauge. The round holes in the gauge are arranged and graduated in sizes up to the chuck capacity of the drill. This feature enables the user to select the correct size twist drill quickly without trying to read the size stamped on the twist drill shank, which is generally obliterated after the twist drill has been clamped in the chuck a few times.

GASOLINE TAX RECEIPTS RISE IN PENNSYLVANIA

Harrisburg, Pa., Nov. 16.—Receipts from gasoline tax collections last month were $3,331,894 as contrasted with $3,028,920 in October, 1931. This is an increase for last month of $302,973, or 10 per cent., the Bureau of Liquid Fuels Tax reports. The gallons on which tax was collected last month amounted to 112,928,759; for the same month last year 101,971,877 gallons, an increase of 10,956,882, or 10.74 per cent.

During the fiscal year June 1, 1932, to October 31, 1932, receipts were $14,420,112. For the same period last year they were $14,258,734, an increase this year of $161,377 or 1.13 per cent. In the first five months of the present fiscal year there were 483,150,575 gallons taxable reported. In the same period last year the gallonsage taxable reported was 480,896,465, an increase this year of 2,254,110 gallons, or 0.47 per cent.

DU PONT TAKES ACTION TO PROTECT DUCO NAME

Wilmington, Del., Nov. 16.—Court action is being instituted against automobile refinishers and others by E. I. du Pont de Nemours & Co., Wilmington, Del., where the registered trade mark "Duco" is used without authorization or where permission to use the trade mark has been rescinded.

CONTINENTAL IN CANADA

Toronto, Canada, Nov. 16 (UTPS).—Roy D. Kerby, president of Dominion Motors, Ltd., states that within a month's time Continental Motors Corporation, he expected, would be in a position to announce specifications regarding the new Continental Motors car.

SPARKS from DETROIT

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Austin Busy

* * *

Jack Reeder

* * *

Dinners for Dealers

* * *

Campaign Buttons

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Chris Sinsabaugh—Detroit Editor

R. O. GILL, president of Austin, made in Butler, Pa., maintains a Detroit office in the New Center building, which explains this commentator's contact with him and enables the column to tell the industry of the progress the little car is making.

On the eve of announcing the new line, President Gill told of the activity at Butler, where the plant has been running six days a week for the past four months, with a weekly production of 300 units. In the past ninety days 300 new dealers have been secured, Gill says, and only this week Austin breaks into New York with two dealers on Broadway. Newark, N. J., now is in Austin territory, while the car has strong representation in Cleveland.

* * *

THE SOUTH HAS BEEN DUCK SOUP for Austin of late and last month in twenty counties in Florida, Gill says, the Austin was first in registrations, and in Georgia, Alabama and Louisiana it was fourth. Austin, you know, is listed among the "miscellaneous" in the registration tables, so it has been making all this progress without the industry really realizing it.

* * *

WITH ALL THIS BUSINESS popping up in the South, Gill has discovered a way of cutting dealer overhead by shipping by water from Baltimore. Cars are driven over the road from Butler to Baltimore and even here Gill has improvised something new. In a driveway the car being towed has its engine running, to remove the strain on the car doing the towing.

When it comes to shipping by rail the Austin again scores. Gill tells he can pack eight in a freight car without double decking, while with trailer shipments he can carry nine at a time.

* * *

READING IN THE CURRENT ISSUE of Cosmopolitan a football article by Quentin Reynolds entitled "Were They Such Giants Then?" I note in that part of the story telling what has become of some of the old stars, the paragraph: "Jack Reeder of Dartmouth is advertising manager of one of the largest motor car companies in the United States."

Identifying him, that is Jack Reeder of Cadillac, who jumped from the gridiron into advertising and now looket him! You'd suspect he had played football, but he doesn't tell you about it, so that's why the conductor has done a little research. Reeder was a halfback on the Dartmouth team that went through 1923 and 1924 without a defeat, while among his teammates were Bjorckman and Oberlander, both All-Americans.

* * *

NOTHING CAN STUMP our own Fisher Building, so B-O-P has been taking advantage this week of the building's ability to come to bat in any emergency. The big auditorium in the General Motors Building has been used for the meetings of the B-O-P regional and zone managers, so lunch could not be served there. So what did B-O-P do but take over half the cafeteria in the Fisher Building for luncheon purposes. While we common mortals have been waiting on ourselves, the field forces of B-O-P, 185 strong, have been eating in the other part of the room, served by pretty waitresses.

* * *

WITH THE BOOMING of the first guns in Chevrolet's preannouncement campaign there has appeared a snappy button for the lapel of the coat. Red, black and white, it depicts the drum major with his baton and carries the slogan: "Watch the Leader." Now that Chevrolet may be said to be down to brass tacks as regards 1933, the button is easily attached.

Things are looking up with Sutton & Schipper of New York, who are specializing on industrial publicity so that this week they are opening a Detroit office in the Basso Building. On the Detroit staff is Alex Golden, well known as former Dodge publicity contact for Advertisers Inc.

Retail Salesmen—This Is Your Page

This department is devoted to the interests of the retail sales division of the industry. Salesmen, this is your department. Automotive Daily News wants you to get something from this department that will help you in your work on the firing line. It wants you to pass on your own experiences, success, failures to help your brother salesmen. Send in your story in the form of a letter, or even a postal card, and let us get it ready for publication. Your achievement or your mistake may help another salesman to make sales or avoid errors that cost you commissions.

Dealers read this page. Give us the benefit of your reactions on these problems that affect the work of your salesmen, the men on the firing line, the men who bring home the bacon or don't.

Studebaker Names Hum-Dingers; Sends Bonus Checks to Master Salesmen After Contest

Studebaker today announced the names of the hundred Hum-Dingers—the stars of the Studebaker retail selling organization throughout the country as demonstrated over a period of nine months, beginning January 1, 1932. Substantial cash prizes have been awarded to these men in recognition of their excellent records.

The contest was conducted on a monthly basis with points awarded on the basis of cars sold during that month. Only the leading salesmen qualified during each thirty-day period, and the final standings comprise those whose names appeared most frequently at the head of the monthly lists.

Only two men, L. J. Friedman of Brooklyn and M. J. Bloom of New York were in the select group each of the nine months. New York carried off the honors in this respect and smashed all previous records for the number of Hum-Dingers in one organization by placing eighteen salesmen. Chicago had thirteen and San Francisco seven also to earn honorable mention.

The complete list of Hum-Dingers follows:

L. J. Friedman, Brooklyn; M. J. Bloom, New York; C. F. Peters, Boston; C. G. Thanos, Boston; A. L. Gilberti, San Francisco; R. J. Fox, New York; S. Kaufman, New York; D. Worns, New York; H. G. Bartels, San Francisco; A. Mathews, San Francisco; J. G. Richwine, San Francisco; S. J. Hess, Washington; S. H. Ingram, Chicago; J. Muldoon, New York; J. Salkind, New York; F. C. Schneider, New York; J. I. Wolfe, New York; J. S. Lucas, San Francisco; G. W. Harrington, Washington; J. W. Brosnihan, Worcester, Mass.; E. S. Marden, Augusta, Me.; E. P. Wagner, Boston; S. J. Ladenson, Chicago; C. F. Merrill, Evanston; M. S. Richard, Chicago; G. A. Berger, Brooklyn; W. H. Buchanan, Newark, N. J.; R. J. Shults, Canajoharie, N. Y.; L. Block, Philadelphia; J. S. Knotts, Philadelphia; O. M. Larson, Eau Claire, Wis.; J. R. Young, St. Paul.

J. J. Blum, San Francisco; C. F. Orra, Oakland, Cal.; W. M. Poland, Oakland, Cal.; F. H. Zuanich, Oakland, Cal.; E. F. Fogerty, Washington; D. H. McMahan, Washington; H. D. Delaney, Boston; G. J. Bowman, Buffalo; M. J. Golden, Rochester, N. Y.; E. A. Bonow, Milwaukee; J. D. Compton, Chicago; A. L. Losson, Chicago; E. G. Thoma, Chicago; T. P. Willock, Chicago; T. F. Dequila, Beaver Falls, Pa.; H. J. Hetzler, Pittsburgh; C. E. Beaver, Dallas; W. H. Spong, Houston; W. W. Reid, San Diego, Cal.; J. N. Bauchens, Glendale, N. Y.; I. L. Epstein, Brooklyn; G. J. Hassinger, Milton, Pa.; J. Snyder, Philadelphia; R. A. Briggs, St. Paul; L. A. Stephens, Minneapolis; J. D. Travis, Minneapolis; A. C. Brown, San Francisco; S. O. Rodman, San Francisco; D. N. White, Sacramento, Cal.; S. J. Makielski, South Bend; G. H. Titter, Baltimore; V. Freeman, South Bend.

F. R. Silverman, Providence; J. Wolfson, New York; J. S. Butzer, Ephrata, Pa.; W. P. Gockel, Cleveland; J. P. Geghan, Waterbury, Conn.; S. Smith, Evanston, Ill.; J. E. Lamb, Brooklyn; Chas. Haisler, Jr., Chicago; S. B. Richardson, Evanston, Ill.; A. W. Welch, Los Angeles; E. H. Biemiller, Baltimore; E. E. Pierce, Boston; F. R. Gilmore, Chicago; Ted Tompkins, San Antonio; A. J. Gerhardy, Albany; F. E. Sherk, Ft. Wayne, Ind.; M. F. Norling, Denver; M. B. Dodd, Norfolk, Conn.; R. E. Myhrman, Chicago; J. Fisch, Bronx; J. D. Romano, Brooklyn, C. S. Osterhoudt, Kingston, N. Y.; T. D. Hickey, Princeton, N. J.; R. F. Henderson, San Jose, Cal.; G. A. Robinson, Brooklyn; H. Wascowitz, Bronx; C. E. Eidam, Hazleton, Pa.; H. H. Barron, Atlanta; M. A. Tilbrook, Aspinwall, Pa.; J. D. Carrico, Oklahoma City; E. N. King, Freehold, N. J.; L. T. Kelley, Cleveland; I. Albert, Bronx; H. Birn, Newark,

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DEALER DOINGS

SEATTLE, WASH.

All of the dealers have started "unusual used car sales" or adopted ballyhoo of this type, in an effort to close out used cars as much as possible before the first of the year. Advertising is of the sensational "slash" type and designed to make prospects "loosen up."

* * *

West Seattle used car sales are good, according to James Finley, sales manager of W. L. McNamara Company, Chevrolet dealers.

* * *

Fred Mercer, Inc., is a new dealer for Hudson-Essex, showrooms being in the university district, at North 47th and 10th Avenue, N. E.

* * *

Thomas J. Hay, president of the Red Book Publishing Company, Chicago, spent several days here the past week, and was guest at a dinner meeting attended by dealers. While here he appointed R. H. Rice as Red Book representative, this being the used car manual now in use here. Rice's district includes Washington, Oregon and Idaho and his headquarters are at the Edmund Meany Hotel, Seattle.

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CHICAGO

Growing popularity of the Michigan Avenue motor row as a used car selling center is being noted in striking manner. The latest recruit is the Paulin-Kirkpatrick Used Automobile Company, with headquarters at 2244 South Michigan Ave. Heading the concern is C. E. Paulin, better known as "Pete," formerly used car manager of the Cadillac Motor Company's Chicago branch.

* * *

Under auspices of the Shell Petroleum Corporation, of which he is aviation manager, Major James H. Doolittle, will take off November 23 on a nationwide flight of 9,000 miles. An announcement from the company states that the famous world record holding pilot will attempt to average 230 miles an hour and establish as many new speed marks as possible in intercity flights. He will fly a plane named the Shell lighting, equipped with a 700 horse power Wright Cyclone engine.

* * *

Built to accommodate forty-four passengers as a day coach and twenty-eight at night by reason of its sleeping arangement, twenty-four units of a new type of motor bus will be placed in service between Chicago and El Paso, Tex., by the Columbia Nite Coach Company, according to an announcement by David Wolzinger, president and general manager of the company. Purchase of these coaches represents a $450,000 order.

* * *

Charles F. Yonkers, well known in the Chicago trade, has just entered the insurance business through association with the Continental Mutual Benefit Association. Mr Yonkers was formerly Buick branch manager in this zone and more recently established a Buick distributorship at Indianapolis.

* * *

The Pollard Motor Company, in business here as an authorized dealer for the past ten years, is celebrating its anniversary with a special sale of used cars in honor of the event. This is in line with the company's policy on birthdays in past years.

* * *

NEW ORLEANS, LA.

The Ford Motor Company of Arabi, La., was awarded a contract for sixteen one-half-ton trucks, eight to be delivered in Jackson, Miss., and eight to be delivered in Hattiesburg, Miss., by the maintenance division of the Mississippi state highway department.

* * *

Henry Stoutz, Jr., vice-president of Stephens-Lindner Motor, Inc., Plymouth and De Soto distributor, attended the Plymouth sales conference in Memphis, Tenn.

* * *

HAMPTON, IA.

De Soto Motor Corporation today announced that Rowe-Worth Auto Company, Main Street, operating as De Soto and Plymouth direct dealer for that territory, has changed its name to Fehrmann-Rowe.

* * *

GRAND RAPIDS, MICH.

A. B. Burkholder and M. D. Graham of the A. B. Burkholder, Inc., Company, Chevrolet dealers, presented a humorous sketch, "Used Cars in a Department Store," before a meeting of several hundred employees of Herpolshiemer's Department Store, November 9.

* * *

Sale of the F. F. Wood Company, local Ford dealers, to a bank was learned this week.

* * *

SAN DIEGO, CAL.

De Soto Motor Corporation today announced the appointment of Jack H. Storey, 405 W. Broadway, as a De Soto and Plymouth direct dealer for that territory.

WINS NOBEL AWARD

New York, Nov. 16.—The Nobel award in chemistry for 1932, the greatest recognition that any scientist can receive, will be presented to Dr. Irving Langmuir, associate director of the General Electric Research Laboratory, in Stockholm, December 10.

GRAHAM ANNOUNCES WINNING SALESMEN

Detroit, Nov. 16.—Another list of prize-winning salesmen to whom gold watches have been awarded for their standing in the Graham sales contest, has been announced by the Graham-Paige Motors Corporation.

They are as follows: P. K. Parrot and J. A. McClendon, Butler Motor Company, Kansas City, Mo.; Frank G. Eister, Shamokin Dam, Pa.; George Booth and J. A Frye, Graham-Paige Company of Northern California, San Francisco; A. Frederic Brock, Jim Schlemmer, Himself, Canton, O.; Roger Reinhardt, Stanton Motors, Inc., Columbus, O.; W. Mahoney, Graham-Paige Company of New England, Boston; Willard Laseter, Rabon-Thompson Company, Inc., Houston, Tex.; A. L. Cunningham, Webb Motor Company, Inc., Oakland, Cal.; R. E. Roberts, Marriott-Brock Motors, Mobile, Ala.

Used Car Selling Prices

Automotive Daily News in this department offers for the benefit of its dealer and salesmen readers a compilation of prices at which used cars have within the past few days been offered for sale by reputable dealers in various cities. These prices will vary on condition and from other causes. They are not presented as being the exact prices at which these models should be sold, but simply as the prices at which they have been offered for sale by dealers in the various cities. Other cities will appear in subsequent issues of this paper.

San Diego, Cal.

Make of Car	1932	1931	1930	1929
Auburn	...	[7]550-[4]585	425-[4]495	...
Buick (Light)	[2]695	[2]465-[2]595	...	[1]295
Buick (Med.)	725	...	[2]585-[2]595	...
Buick (Big)	925	1075	...	[2]425
Chevrolet	695	[2]315- 475	[1]305- 395	[1]195-[2]225
Chrysler 6	...	...	395- 495	345- 495
Chrysler 8	...	895- 995	...	...
De Soto	795	...	395- 425	[2]335-[2]345
Dodge 6	..	645	...	265
Dodge 8	885	...	445- 485	...
Essex	...	...	...	[1]245-[2]325
Ford 4	[2]545	[1]315- 445	[2]175-[1]345	[2]175-[2]195
Ford 8	[2]525-[2]649	...	...	[1]185
Hudson	...	595	...	[1]345- 425
Hupmobile 8	...	...	...	315
La Salle	...	...	[4]995-1185	[2]595
Nash 6	[2]695	595	[2]425- 550	295- 450
Nash 8	...	[2]595	...	...
Oakland 6	...	...	...	[1]195
Oakland 8	...	...	[4]445	...
Oldsmobile 6	...	585-[2]595	...	...
Packard	...	...	...	850
Plymouth	495	325-[2]375	...	165-[2]245
Pontiac 6	...	475-[2]575	445	[2]250-[1]325
Studebaker (Dic.)	...	595	...	...
Studebaker (Com.)	...	785	...	...
Studebaker (Pres.)	...	1045	...	375
Willys-Knight	...	885	...	[2]295
Willys-Overland 6	...	395	[2]265- 295	[1]245
Willys-Overland 8	...	795	395	...

Legend: [1]coach; [2]coupe; [3]roadster; [4]convertible; [5]victoria; [6]limousine; [7]brougham; [8]touring or phaeton. When no symbol is used the car is a sedan.

N.S.P.A.—Joint Show—M.E.M.A.

Automotive Daily News Issues December 3, 6, 7, 8 and 9

During the joint show every issue will go to every important jobber in the United States, whether he attends the show or not. This will be in addition to our regular distribution.

The December 3 issue will be distributed to show visitors on December 5. Other issues on the dates shown. Extra daily distribution approximately 1,500.

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H. A. TARANTOUS, *Business Manager*
350 HUDSON STREET, N. Y. C.
Detroit Office:
GEORGE M. SLOCUM, Manager
Fisher Building, Detroit, Mich.
Western Office:
WILLARD R. COTTON, Manager
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THURSDAY, NOVEMBER 17, 1932

ADVERTISING AND BUSINESS HEADQUARTERS

Harry A. Tarantous, Business Manager. 350 Hudson St., New York, N. Y.
B. B. Crighton, Assistant to Business Manager.
George M. Slocum, Manager, Detroit Bureau, 427 Fisher Building, Detroit, Mich.; phone Trinity 2-3500 Willard R. Cotton Western Manager, 333 North Michigan Ave., Chicago, Ill.; phone Andover 2400. Metz B. Hayes, New England Manager, Little Building, Boston, Mass. Blanchard, Nichols & Coleman, American National Bank Building, San Francisco, Cal.; Lincoln Building, Los Angeles, Cal.; 1037 Henry Building, Seattle, Wash.
Address ALL Advertising and business correspondence to 350 Hudson St., New York city.

EDITORIAL DEPARTMENT

350 Hudson St., New York, N. Y. Telephone CA nal 6-1000.
Alexander Johnston, Editor. William C. Callahan, News Editor.
Statistical Department (registrations and specifications), P. J. Robas, statistician
Engineering Department, A. Benson Carleton, technical editor Merchandising Department, Charles S. Zack, editor. Art Department, John Bauerfeld, director.
Detroit Bureau, Chris Sinsabaugh, editor, 427-8 Fisher Building, Detroit, Mich. Telephone Trinity 2-8500. Contributing editor John C. Wetmore.

Sucker Money

SOME days ago Automotive Daily News, in an editorial, answered an inquiry from a man who purposed investing money in an automobile dealership. We told him that it was possible to make money in this business, but that to do so he must approach it in a businesslike way and guard against certain definite dangers which beset the automobile dealer in this country.

A few days ago we published a letter from an automobile dealer commenting on this editorial and giving so clear an exposition of the dealer's side of the condition about which we had preached that we cannot resist commenting on the reply.

Our correspondent believes that new dealers generally go into the automobile business without any real conception of what they are doing. They do not have clearly before them the real picture of what they are going to encounter. They do not realize how large a share in their business activity the used car is going to have. He protests emphatically against the entrance of what he terms "ignorant dealers" into the retail automobile field. He concludes:

"If their activities were confined to the loss of their own money, there would be little reason to be concerned about them, but as long as they are operating, they prevent anyone else doing business at a profit.

"It is 'sucker money' of this kind that has done more than any other one thing to shoot the retail automobile business to pieces. It is this kind of retail capital that has kept some of the automobile manufacturers in business for the last few years. Whenever we find a heavy turnover in new dealerships for any line of cars, it is clearly evident that the maker of this particular line is conducting a strenuous hunt for any poor boob with capital enough to buy a few cars, regardless of their lack of ability as intelligent merchandisers."

We doubt that many of the companies who have weathered the recent storms and are still in business care very much to tie up this "sucker money." They would indefinitely rather have an intelligent new merchant who appears good for a reasonable quota of cars year after year than to get a new dealer who thinks the automobile business is a "game."

In spite of everything this idea that easy money can be made in retailing automobiles still persists. Some people still believe that selling cars is a sort of sporting proposition in which a handsome show window, well-dressed salesmen and Oriental rugs play the largest part. Naturally enough the sales departments of many manufacturing organizations sign up dealers who have capital and this sporting idea of selling cars, but we do not believe the factories like the idea any better than other dealers do.

The net result of the entrance of a dealer not qualified to merchandise motor transportation is the sale of a few cars, perhaps on an exchange basis, that spoils sales for legitimate merchants. Then the sporting dealer takes an anguished look at the red ink on his books and decides to go duck shooting. Then a stock of cars comes on the local market at prices which make life harder for the man who wants to make a businesslike effort to merchandise motor transportation.

Obviously this makes the lot of the legitimate dealer even harder than it has been, but in the final analysis the manufacturers also suffer from the brief tarrying of the sucker money merchant. There is no doubt that this class of fly-by-night dealer has driven many qualified dealers out of business, which has certainly not benefited the factories. In good truth legitimate dealers and manufacturers alike have a fundamental reason for wanting to prevent the entrance of these unqualified merchants into the retail automobile business.

There is little that dealers can do to prevent fly-by-nights going into the business. About all they can do is hope that their stay will be as brief as possible and the results as little damaging as may be. The factories, however, can do much to keep unqualified merchants out of the field. They can be certain that any prospective dealer understands just what he is about; through their merchandising experts they can point out to prospective dealers the problems that will confront them; through their accounting experts they can show the prospective merchant the need for analysis of investment, potential sales, costs, etc. The automotive manufacturers are vitally interested in keeping "sucker money" out of the business and they should exert all possible care to do just that.

PLANTS IN DETROIT RECALLING WORKERS

(Continued from Page 1)

centers has begun. Pierce-Arrow has just announced that it has returned 2,000 workers to its Buffalo plant. Willy-Overland has been calling back workers at Toledo, and Studebaker at South Bend has been increasing its pay roll.

The next month should see automotive employment reaching up to a point somewhere near its normal volume for the season. It certainly will not set a new record, but unemployment in this particular industry will be less of a problem for some weeks to come.

The fact that automotive employment is enjoying a seasonal increase is causing a certain amount of uneasiness among civic authorities. Here in Detroit the authorities want it distinctly understood that there is no possibility of absorbing outside labor. The seasonal increase will give employment for a considerable number of workers already domiciled here, but will certainly not be able to absorb any influx from other places. Practically all the automotive plants are taking care of their regular employees first; that is men previously on their pay rolls, and there will be no jobs left over for workers from other sections.

This condition has already been noted in other automotive manufacturing centers and every effort should be made to discourage workers from leaving their present homes in an effort to profit by the seasonal employment increase in our particular industry.

TRUCK SAFETY MEETING ADDRESSED BY CRAIG; FLEET RECORDS TOLD

Newark, N. J., Nov. 16.—A safety meeting for commercial vehicle drivers was staged by Newark Safety Council in Public Service Auditorium. John F. Ackerman presided. The program included a talk by Russell Craig of Philadelphia, and closed with a movie of bad driving hazards.

Mr. Craig has been successful in reducing the number of accidents in truck fleets operated by the Philadelphia and Wilmington, Del., areas. He used a blackboard to illustrate his talk.

The meeting was intended especially for drivers of fleets enrolled in the inter-fleet drivers safety contest conducted by Safety Council, but many commercial vehicle drivers in the Newark area attended. Several fleets in this contest have made excellent records, according to Fred M. Rosseland, secretary-manager of the Newark Safety Council, and have been at the top of the list of the commercial vehicle safety records compiled by the National Safety Council.

Fleet records of over 500,000 miles without a single traffic accident, department store fleet records of 90,000 miles in a single month without a traffic accident, and individual drivers' records of from 60,000 to 200,000 miles without a traffic accident were cited by Mr. Rosseland.

ARNDT APPOINTED RESIDENT MANAGER KARI-KEEN PLANT

Sioux City, Ia., Nov. 16.—E. A. Arndt has been appointed resident managing director of the Kari-Keen plant of the Gabriel Kari-Keen Company at Souix City. This appointment follows Mr. Arndt's recent election as a director and vice-president of the Gabriel Kari-Keen Company of Cleveland.

Mr. Arndt has been in conference with officials of the Gabriel Kari-Keen Company for the past month, attending a series of meetings at the main office in Cleveland and also visiting the branch of the company in Detroit.

Lessons of Depression Chart Course for Future

By BERTRAM LEWIS
Vice-president Commercial Credit Company

In conference with a group of prominent distributors one night last summer, the writer was asked to state his views on the future of the automobile industry and his opinion as to its present greatest needs.

Believing that those same two questions are uppermost in the minds of all dealers today, it seems worthwhile to repeat the answers here.

It is the writer's sincere belief that the automobile industry, along with industry in general in this nation, has a promising outlook—IF—and only IF—it has taken to heart the lessons that its hardships of the past three years have fairly bellowed at it.

America's population continues to grow and its civilization is based on the general use of the motor car. Every normal American wants a motor car more than any other utility that money can buy.

He also wants a motor car in first class operating shape and of the 22,000,000 passenger cars in use today on American highways, over 8,000,000 are rapidly nearing the junk stage. Millions of others need service on a scale beyond all recent precedent.

The market is there, beyond a shadow of a doubt. If we have sense enough to exploit it profitably, this business has a future that every other industry on earth may reasonably envy. Whether or not it has such a future rests entirely with itself and the answer depends, first, on the extent to which the factories accept the retail problem as preponderantly as their own, and, second, on the breadth and vision of the dealer body in shouldering its proportion of the load.

No truth, indeed, has such vital bearing on the industry's possibilities today as the classic dictum of the Hebrew sage, "Where there is no vision the people perish."

The factories, in the last analysis, are responsible for their retail outlets. They appoint the dealers (or distributors, according to the set-up)—many of whom start virtually from scratch in their experience of managing a dealer enterprise. Their training must come either from their factories or through experience—and there's no time today in this business to learn much from experience. By the time you've learned, you're out. Your mistakes have been too costly. But the factories know, or should know, what mistakes to avoid. The principles of realizing profit from the sale of motor cars are well established. Sound management standards for every retail department have been set up through the years and the factories should know them and see to it that their dealers know them too.

The calibre of the dealer body depends upon the factories' selection. Its merchandising skill will depend very largely on their training. By picking inferior dealers the factories can demoralize the industry. By letting dealers operate without sufficient oversight and co-operation they can and will permit a high rate of mortality, with its attendant evils of distress merchandising, curtailment of profits among the survivors and general disorganization of the dealer body.

Factories with vision will therefore seek to strengthen their dealer personnel and to educate its members far more thoroughly than heretofore in every phase of the retailing art. The more progressive ones are beginning to do a masterful job along these lines already. But every weak spot lowers the level for the industry in general and not until all have taken long strides from their present position will the business as a whole be moving on a plane that makes its future promise what it should be.

And for every obligation that rests upon the factories at this juncture the dealers carry one of almost equal weight. Regardless of what the factories may try to do for them they have plenty to do for themselves. And the distributors, besides putting their own houses in order, have the same responsibility towards their dealers that the factory has towards them.

As salesmen, most dealers are proficient. Some are competent sales managers. A few are able service managers. And once in a blue moon you meet one who is a really first class used car merchant. But few indeed there are who qualify as general managers—who co-ordinate all departments of the business into one efficient whole, producing its full potential both of volume and of profit. And none but those who master that function are going to cash in fully on the buying years that seem to be ahead.

One and all, too, must learn to co-operate. The price-cutting orgy must cease. The dealer wails long and loud about unprofitable trading and if he were today under factory pressure to sell impossible quotas he would be entitled to a sympathetic hearing—but, by and lar , he isn't. He has pretty much made his own quotas for several years past and still he trades unsoundly. Granted that the weaklings set the pace in this respect and that, with better factory selection and train ng the weaklings could in time be weeded out, still, as a group, the retailers themselves are chiefly to blame for buying their business, and at a savage cost.

(Continued on Page 10)

COMING EVENTS

NOVEMBER

11-19—Glasgow, Scotland. Motor Show
14-16—Atlanta, Ga. National Tire Dealers' Association
15-17—Houston, Tex. American Petroleum Institute Meeting.
17—Cleveland, O. Storage Battery Manufacturers' Trade Practice Conference.
19—Charlotte, N. C. North Carolina Truck Owners' Association, meeting.
18-Dec. 4.—Paris, France. Aeronautical Show.

DECEMBER

1- 2—Washington, D. C. Highway Research Board, meeting.
2- 3—Detroit. National Standard Parts Association Convention.
5—New Orleans, La. Association of Asphalt Paving Technicologists.
5- 9—New York. Annual Meeting A. S. M. E.
5-10—New York. Power and Mechanical Engineering Exposition.
5-10—Detroit. Motor and Equipment Manufacturers Association, convention, Hotel Statler.
5-10—Detroit. Third Annual Joint Trade Show, National Standard Parts Association and Motor and Equipment Manufacturers' Association, Convention Hall
6- 8—New Orleans, La. National Association of Finance Companies, annual convention
12-15—Springfield, Ill. Automotive Trade Association annual convention, St. Nicholas Hotel.

JANUARY

7-14—New York City. National Automobile Show, Grand Central Palace.
7-14—San Francisco, Cal. Motor Car Dealers' Association of San Francisco show.
7-15—Los Angeles, Cal. Los Angeles Motor Car Dealers' Association, twentieth annual show.
8-14—St. Louis. Automobile Dealers' Association Show, Midwest Terminal Building.
9—New York, N. Y. Society of Automotive Engineers' Show, meeting.
12—New York. Annual S. A. E. dinner, Hotel Pennsylvania
12-13—Springfield, Ill. Illinois Automotive Trade Association, meeting.
14-21—Newark, N. J. Newark Automobile Dealers' Association, show.
14-21—Buffalo, N. Y. Annual show.
15-21—Cincinnati, O. Cincinnati Automobile Dealers' Association, show.
16-21—Brooklyn, N. Y. Annual Show.
16-21—Philadelphia. Annual show.
16-23—Detroit. Highway and Building Congress
21-28—Boston, Mass. Boston Automobile Dealers' Association. Boston Commercial Motor Vehicle Association, show.
21-28—Detroit, Mich. Detroit Automobile Dealers' Association, show
22-26—Detroit. Annual S. A. E. meeting, Book-Cadillac Hotel.
27-Feb. 15—Cairo, Egypt. International Salon.
28-Feb. 4—Chicago. National Automobile Show, Coliseum
28-Feb 5—Washington, D. C. Washington Automotive Trades Association, show.

FEBRUARY

4-11—Indianapolis. Twenty-second annual show, Indiana State Fair Ground.
9-11—Springfield, Ill. Springfield Automobile Dealers' Association, show.
11-18—Kansas City, Mo. Kansas City Motor Car Dealers' Show.
27-Mar. 14—New York City. Chemical Exposition, Grand Central Palace.
20-21—Cleveland, O. National Petroleum Association.

MERCHANDISING ACCESSORIES EQUIPMENT **WHOLESALE** DISTRIBUTION SHOP EQUIPMENT REPLACEMENTS

10 MAJOR SERVICE OPERATIONS TO AID JOBBERS' SHOPS

Shop Equipment Associates, New York, in its latest bulletin stressing preparing cars for winter driving as an important shop equipment market, lists the following ten major service operations:

1. Towing Service—With the coming of snow, sleet, rains and soft roads, the number of mishaps in the winter is greater than at other times of the year, which means a greater demand for towing services. This calls for wrecking cranes, winches, towing poles, towing dollies and all other equipment necessary for specializing in this type of service. Dealers investing in this type of equipment have two sources of profit—the profit made out of the towing job plus the profit out of the repair work brought into the shop as a result of the towing job.

2. Radiator Service—Use of anti-freeze calls for inspection and cleaning of cooling systems if freezing up and leakage of anti-freeze solutions are to be avoided. Radiator service calls for specialized equipment if a job is to be done thoroughly, quickly and profitably. Euipment is needed for flushing, welding and soldering.

3. Starting, Lighting and Ignition Service—The jobber's sale of batteries gains its peak in the winter months. The sale of storage batteries should suggest that dealers be told about properly equipping themselves for starting, lighting and ignition service, and calls for such items of equipment as battery chargers, ignition and electrical testing equipment, and many other items of related battery service equipment.

4. Lubrication Service—There is only one way in which a thorough lubrication job can be done in the winter time and that is through the use of specialized equipment. With snow, ice and mud making lubrication more difficult and more frequently necessary no dealer can hope to sell satisfactory winter lubrication service without lifts, high pressure and specialized guns, air compressure and other affiliated equipment.

5. Tire Service—Winter driving with its additional obstacles and dangers calls for better tires and more frequent tire service. This means air compressors, tire changers, tire spreaders, garage jacks, etc.

6. Wheel, Axle, and Frame Service—Here is a profitable two-way winter service—corrective and preventive. Safe winter driving requires that wheels be properly aligned. Misalignment also causes excessive wear on chains and tires at this season of the year. Furthermore, collisions caused by skidding or slipping result in wheel, axle and frame straightening jobs. A market for wheel pullers, wheel aligners, axle straighteners, presses, frame straighteners, heating torches, jacks, lifts, and other related pieces of equipment.

7. Brake Service — Wet weather diminishes the effectiveness of the brakes on all cars and trucks. Brake inspection is much more important and necessary for winter driving than for summer driving. Brake serv ice calls for many special items of shop equipment, such as drilling and counter-sinking machines, drum truing lathes, lining and grinding machines, testing equipment, jacks, etc.

8. Fender, Body and Top Service—Icy roads or deep ruts cause much damage to fenders and bodies. Wet weather makes leak-proof tops absolutely necessary. Specializing in this type of work offers a real opportunity to the dealer. He needs specialized equipment, including hand and electric fender straightening tools, body tools, electric sanders, paint spraying equipment, hand and electric polishers, jacks, etc.

9. Egine Overhaul—To those motorists who do not use their cars in the winter time this season offers the best season for engine overhaul jobs. Dealers should be urged to study the profit possiblities of this work during the winter. It represents a chance to offer their customers this work at special prices inasmuch as the work can be done during the dull periods. Proper equipment will enable the dealer to do the work at special prices without sacrificing profit on labor and parts. He needs such equipment as valve refacers, valve grinding equipment, boring bars, cylinder grinders and hones, bearing reamers, rebabbitting fixtures, engine cleaners, ignition testing equipment and many other items too numerous to list in this brief space.

10. Painting Service—Many car owners have learned to have their painting done in the winter time so their cars can be ready for the spring and summer driving seasons. The winter season represents one of the best times to push the sales of all types of equipment needed for this service. Such equipment includes air compressors, paint spray equipment, electric sanders, spraying booths, special lighting equipment, polishers, etc.

Editor's Column

Efforts to obtain the introduction of a bill to prohibit buyers as well as sellers from indulging in price discrimination will be made at the next session of Congress.

The bill, which will ask an amendment to section 2 of the Clayton act, was suggested by Charles Wesley Dunn, general counsel to a grocery manufacturer's group.

"At present," Mr. Dunn said, "section 2 of the Clayton act runs only against the seller. It is clear that he buyer who induces the prohibited price discrimination is as guilty as the seller who makes it in the practical conception of the situation. Likewise, it is clear that, in this conception, a buyer who is able to compel such discrimination by a seller, and does so, is more guilty than the seller. Yet, as the law now stands, the buyer can participate in such a deal with impunity."

Growing recognition of the importance of reciprocity in the buying and selling of products by industrial plants has led in recent months to the establishment of special departments by large companies to handle such matters.

Pushed primarily by the steady decrease in sales volume of the heavy industries in the last three years, reciprocal buying and selling has undergone several stages. Originally, it started out as a sales proposition, in which many companies, eager for business, promised buyers to place orders with them in return for a good-sized purchase.

As the scheme developed in importance and size and necessitated higher costs on commodities when reciprocity was involved, it became expedient to turn it over to the purchasing departments. The plan worked smoothly for awhile in the purchasing departments, but here again the higher prices paid for goods in reciprocal agreements became a troublesome subject.

Recently it was decided by the majority of companies to charge the difference in the cost of products to sales expense when reciprocity was involved. In this manner the extra expense is definitely charged to one department and the added cost brings to sales divisions a realization of their responsibility in making reciprocal agreements. The result is that they have become more cautious and are making such agreements on a sounder basis. The number of such compacts is steadily growing.

In order to assure the proper handling of these agreements, many companies, particularly the largest ones, have formed special departments, called trade relations departments or by some other name. Such divisions must see to it that the differential in price is not too high and that the transaction will prove of advantage to them. Of necessity reciprocity is confined to such industries as oil, machinery, steel, chemical, metal and other trades, in which the interchange of goods is made possible by the nature of the products involved.

DeWitt Declares Joint Trade Show Will Prove Business Stimulant

The Third Joint Trade Show of the Motor and Equipment Manufacturers Association and the National Standard Parts Association will prove to be a much needed business stimulant and a real factor in adding momentum to the upward swing, according to M. C. DeWitt of the Champion Spark Plug Company, who is chairman of the Joint Show Operating Committee. He says:

"In some respects, business has reached the stage of the very much absorbed college professor, who on leaving his ofice one day, placed a sign on his door stating:

"'WILL BE BACK IN ONE HOUR.'

"Upon returning he read the sign and sat down on the doorstep to wait for himself.

"Business men in all lines and classifications, knowing full well that good business will return eventually, have in effect placed signs on their doors stating:

"'WILL GET BACK ON THE JOB WHEN GOOD TIMES RETURN'

"—— and have sat down to wait.

"Alas and alack, they fail to realize that in the final analysis they are waiting for themselves, because individual initiative is and will be a determining factor governing the return of normal times.

"We need something to stir us up, something to awaken us, and something to get us off the doorstep. What is more apt to do this than the Joint Trade Show in December? It offers a common meeting ground for the interchange of ideas. It is a natural hatching place for real business-building and merchandising plans. Many new lines will be exhibited by manufacturers. Many opportunities will be open to live, alert jobbers.

"An upward trend is distinctly noticeable in the general business world. A more psychological time for a trade show could not be asked. Every one should be on the 'quivive'—jobbers earnest and anxious to view manufacturers' exhibits and manufacturers welcoming the opportunity to display their products. It is a situation which should induce the livest, keenest, and most resultful trade show ever held in our industry.

"If there ever was a time when jobbers and manufacturers alike can obtain real benefit from a trade show and the mutual contacts it affords, it is now. And so I predict that as the time for the opening of the doors approaches, genuine enthusiasm will be evidenced and that the 1932 Joint Trade Show will prove a much-needed stimulant and a real factor in adding momentum to the upward swing of business."

PROGRAM M. E. M. A. ANNUAL CONVENTION

Hotel Statler, Detroit, Mich.

Saturday, December 3

10.00 a. m. Board of Directors.

Sunday, December 4

2.00 p. m. Board of Directors (tentative).

Monday, December 5

10.00 a. m. Credit Department Committee.
10.00 a. m. Credit Manufacturers Group Committee.
10.00 a. m. Membership Committee.
8.00 p. m. Chemical Manufacturers Group Meeting.
8.00 p. m. Service Tools Associates Meeting.

Tuesday, December 6

10.00 a. m. Committee On Legislation.
10.00 a. m. Shop Equipment Associates Committee.
10.00 a. m. Wholesalers Relations Committee.
8.00 p. m. Shop Equipment Associates Meeting.

Wednesday, December 7

9.30 a. m. First Session Annual Members' Meeting.

Thursday, December 8

10.00 a. m. Board of Directors' Meeting.
8.00 p. m. Sales Managers' Conference.

Friday, December 9

9.30 a. m. Second Session Annual Members' Meeting.
8.00 p. m. Advertising Managers' Conference.

USES WIRE BRUSHES FOR CLEANING BORES

Earl Williams, machinist for Davis Automotive Parts, Beverly Hills, Cal., has developed a new plan for cleaning bores after reconditioning. In order to remove as much grit and abrasive as possible after the reboring and honing job, Williams polishes the bores with a wire brush. He has found that a light 31 gauge wire is preferable, but with any wire brush a steady supply of oil must be fed on the cylinder walls. The brush is operated by an electric drill.

He uses four sizes of brushes, 2⅞, 3¼, 3½ and 4-inch, each about a quarter of an inch larger in diameter than the bore. This operation does not require much time, but should be done thoroughly. The resulting finish is smooth and free from hone grit deposit or cirrations left by cutters. Williams feels that his jobs have been much more successful since he started using the brush method for cleaning cylinders.

PROGRAM N. S. P. A. ANNUAL CONVENTION

Book-Cadillac Hotel
Detroit, Mich.
December 2-3

FRIDAY, DECEMBER 2

10.00 A. M.—First General Session
2.00 P. M.—Jobbers' Divisional Meeting
2.00 P. M.—Manufacturers' Divisional Meeting
8.00 P. M.—Second General Session

SATURDAY, DECEMBER 3

10.00 A. M.—Jobbers' Voluntary Open Forum
2.00 P. M.—Third General Session

TUESDAY, DECEMBER 6

8.00 P. M.—Meetiug for all Manufacturer and Jobber Salesmen

"FIX-IT-YOURSELF" STATION BOOSTS PARTS SALES

Omaha, Neb., Nov. 16.—A "Fix-It-Yourself" garage, operated by Vigo Miller and Joe Krupicka in South Omaha, has proved to be a profitable venture and the volume of business has been increasing monthly since last summer. Miller and Krupicka supply the building, tools, advice and even coveralls, and the customers do the greater share of the work, being charged a nominal sum for the use of equipment.

The fix-it-yourself service owes much of its popularity to the depression, perhaps, as many automobile owners are employed only part time or not at all, and welcome the chance to utilize their spare time by making needed repairs to their cars, especially when they can save money on the job by doing the work themselves. The idea also has appealed strongly to other car owners.

The service was intended primarily for motorists who otherwise would do their repairing themselves anyway—at home, in the back yard or garage. A growing number of customers who formerly took their cars to the regular service garages is being served, however. The best customers are truckers from out of town, who otherwise would do their repair work alongside the road somewhere. Incidentally, the garage is located so that it is easily accessible to the hundreds of truckers who visit the South Omaha stockyards every day with their loads of livestock.

Most of the customers are capable of doing what work they want done on their machines with a little expert advice, according to the garage proprietors. Occasionally, however, the mechanic-proprietors are called upon to handle the more intricate jobs, while there are a number of jobs which only an expert can do. The proprietors do not allow just any one to handle the expensive equipment, and when a job requires the use of their thousand dollar lathe, the three hundred dollar cylinder boring machine and similar equipment, they do the work themselves.

Mr. Miller got the idea of a fix-it-yourself place when he was a mechanic in a big Omaha garage. A traveling man came in to get some work done and, when handed his bill, remarked that the garage had done a good job, but that he could have done the job himself if he had the tools and a place to work.

"I've eaten at cafeterias where I had to wait on myself and hired cars from drive-it-yourself shops, but I've never run across a place where I could take my car and fix it myself," lamented the customer. He paid the bill, honked his horn and drove out of the garage, leaving Mr. Miller absorbed in thought. The latter told Mr. Krupicka, also a mechanic, what the traveling man had said, and the upshot was that they opened up the Fix-It-Yourself Garage, which is the first of its kind in Nebraska, and probably the only one in the Middle West.

In the Heart of things
MEN OF MOTORS prefer the WOODWARD—ideal location in the heart of automobile row; near amusement center; quiet yet congenial atmosphere; modest tariff.
Room with bath from $2.50
Ownership Management
THOS. D. GREEN
Hotel
WOODWARD
BROADWAY at 55th ST
New York

Here's a New Thrill—

Plymouth is a Six—but that's not all

Let DeSoto tell you the rest of the story

THE public has the news. Everybody's excited. "Plymouth is a SIX"..."Plymouth is a SIX"... "Plymouth is a SIX"... Everybody's talking. The whole automobile business is affected.

The new Plymouth Six is a natural running mate for DeSoto—and *what* a running mate! What a pair to stand side by side in a dealer's showroom!

DeSoto invites you to clamp a glad eye on the new Plymouth in the nearest DeSoto showroom. But seeing Plymouth is seeing only half the story. There's more... the DeSoto story that's coming.

We expect to be swamped with applications for the DeSoto and Plymouth franchise. It's hot. There's nothing to touch it. Put yourself in this picture. Ask us for the whole story—and we'll tell you some interesting, *inside* facts that will make you burn-up to be with us!

In the first 9 months of 1932—DeSoto jumped from 14th to 9th place in the industry. In this same period, Plymouth sales doubled . . . and it is now making a bold bid to be the Number One Car in the low-priced field.

That IS something for every car dealer to think about. It isn't a question of what DeSoto and Plymouth will do next year . . . *look what these two cars have done already.*

The new Plymouth is ready. The new DeSoto will be out soon. That's all we can tell you here. If you want the "inside-story," write us in confidence. If you want FASTER ACTION, wire... phone... or hop the next train to Detroit.

Communicate with ROY PEED,

DeSoto Motor Corp., Division of Chrysler Motors, Detroit

PLYMOUTH IS A SIX AT

$60 LESS THAN LAST YEAR

Business Coupe $495 . . . Rumble Seat Coupe $545 . . . Four-Door Sedan $575 . . . Convertible Coupe $595 . . . All prices F. O. B. factory. Low delivered prices. Convenient time-payments. These features on all models—Floating Power, hydraulic brakes, free wheeling, full-sized safety-steel bodies, safety-glass windshield, easy-shift transmission with "silent second," rigid-X double-drop frame, oilite non-squeak springs. Closed cars wired for Philco-Transitone radio. Optional—Automatic Clutch $8 . . . Duplate Safety Plate Glass Windows—Coupe $10, Sedan $16.50.

for De Soto Dealers

H. L. HORNING DEFINES AND ANALYZES RESEARCH WORK

In a recent issue Automotive Daily News gave a full news report of a meeting of the Metropolitan Section of the Society of Automotive Engineers at which Harry L. Horning, president of the Waukesha Motor Company, presented his paper on "Research." The complete text of this paper has just become available, along with parts of the discussion which followed. Extracts from the paper and discussion follow:

Research is a system of reviewing all the facts on a subject for the purpose of separating the essential from the non-essential. Psychologists tell us that the growth of thought has four steps:

1. Gathering the facts.
2. Arranging them in some systematic fashion.
3. Analyzing the system of facts.
4. Applying the conclusions.

If we are looking for an analytical definition of research we would not have to go further. Research is just straight systematc thinking. We may clarify by saying that research is just common sense gone "high-brow."

While the four steps of a thought constitute the natural divisions in research, they also may conveniently be described as the four stumbling blocks of research. By far the greatest amount of research is lost because too much is taken for granted in starting to gather the facts. Most men go about research ill prepared.

Habit usually makes a man approach a subject from the same old viewpoint, and he thus loses perspective. The kind of facts, the careful selection and the range to be considered takes the finest intuition. Often there is so little known that every method is tried. This is the Edison way, and may be the only approach possible. Try everything. Observe results, and then follow the clues.

Research is rather a process of turning things upside down, sideways, looking at the inside, and in the most unaccustomed ways. Research is not a system of study peculiar to engineering or science, but applies to the most common pursuits of life. In business, it consists in taking an inventory every year to see what one has (that's getting the facts), what can be done with some articles (that's arranging the fact,) what is worth keeping and what can be junked (that's analysis), and, then, when we act, we have completed the cycle. You see, all the four steps have been observed. This is research in its commonest form.

Most business failures are caused by some one not research-minded, first, because they haven't the facts available about the business; second, they do not know how to organize the facts; third, they do not know how to draw conclusions from these facts; fourth, they haven't the ability and courage to act on the conclusions.

Newton's laws served for 300 years. They were so near the truth that only a revolutionary change in the conception of time, space and energy made it possible to rewrite them. They, or their successors, will always be subject to modification. There is always another approximation.

In starting a research, there are always certain ends in view. The direct results are, of course, the primary consideration, and it is the value of these which justifies appropriations of time and expenditures. Often the most important results are the indirect ones, collateral discoveries, influences, or by-products, and they are in a majority of cases of equal importance, and in many cases of greater importance than the primary objectives. Roentgen discovered the X-ray, as a by-product of another quest. It led to the discovery of radium, the better understanding of matter, destroyed the atomic theory and substituted the speculative realm of electrons, protons, photons, netrons, explained the photo-electric phenomena, and revealed the strongest assumptions on which the quantum theory rests. It cast light on the mechanism of chemical reactions, and physical causes, and in the end, made chemistry, physics, biology, and all related sciences one and inseparable, and came to the supreme conception of our physical world in the Einstein theory.

One night I had occasion to find my way alone to the far end of our shop—consisting of five buildings a distance of a thousand feet, criss-crossed with aisles and loaded with machinery. I had only two matches and a vague idea of where the aisles were and the first lights. I found my way to the end without a skinned shin, and without falling over things. It seems to me, when I realize what had been done, that all this vast and glorious universe in which we live is but a prototype of the dark shop, and the kind of reasoning which led me to the destination was the same in kind which leads all research. First of all, I had some conception of the plan of

(Continued on Page 11)

BUFFALO A. D. A. PLANS 31ST ANNUAL SHOW

Buffalo, Nov. 16.—The Buffalo Automobile Dealers Association announces that Buffalo's thirty-first annual automobile show will be held January 14 to 21 in the 174th Regiment Armory here.

Roy Justice, president of the association, will be in general charge of the arrangements. A special show committee has been named, including Jay Barber, Barber Motors, Inc.; W. E. Biggers, Graham distributor, and Mason B. Hatch, Hatch-McKay, Inc.

Chairmen of special committees are: Tickets—W. F. Groom, W. E. Biggers; music—Mason Hatch, Jay Barber, E. C. Bull; advertising and publicity—Mr. Groom, Roy Chamberlain and Mason Hatch.

CANADIAN SECTION S. A. E. ADDRESSED BY DR. THOMAS

Toronto, Canada, Nov. 16 (UTPS).—Members of the Canadian section of the Society of Automotive Engineers at a dinner meeting held in the Royal York Hotel today heard an address by Dr. Phillips Thomas, "the wizard of Westinghouse."

He also demonstrated synthetic television pictures, the Stroboglow which makes rotating and vibrating machinery appear to be stationary, the "magic yes man," the light ray telephone and the electric eye.

Studebaker Names Hum-Dingers; Sends Bonus Checks to Master Salesmen After Contest

(Continued from Page 3)

N. J.; G. A. Showalter, San Diego, Cal.; E. W. Ashe, Cleveland.

Hundreds of members of the Studebaker retail selling organization throughout the nation who qualified for the Studebaker Master Salesman's Club are now receiving bonus checks direct from the Studebaker Sales Corporation of America.

A letter signed by Paul G. Hoffman, president of the Studebaker Sales Corporation of America, accompanies each master salesman's check. Its closing paragraph reads as follows:

"Studebaker has made substantial progress in its way out of the depression in 1932. You have contributed toward that progress. We intend to really go places in 1933."

The Studebaker Master Salesman's Club was announced last January. Its purpose extends beyond that of a mere contest, since it was originated by Studebaker to provide a type of income insurance for members of its retail organization during the slack months of the automobile business at the close of the year.

In order to qualify, Studebaker salesmen had to sell an established minimum of Studebaker passenger or commercial cars; had to satisfactorily complete such sales course or courses as the factory specified; and had to be continuously engaged in the sale of Studebaker products from the date of registration in the Master Salesman's Club, up to and including the date on which the distribution of bonuses was made.

Bonus checks are being mailed out in three monthly installments. October 31 bonus checks have already been mailed. The same recipients will receive another check the latter part of November and a third just prior to Christmas Day.

CLASSIFIED ADVERTISEMENTS IN THE AUTOMOTIVE DAILY NEWS BRING RESULTS

Sales Leaders and Their Standing in the First Ten Passenger Car Sales Positions by States in October as Compared With September, 1932

OCT., State	1932 Sales	First		Second		Third		Fourth		Fifth		Sixth		Seventh		Eighth		Ninth		Tenth	
Ark	1042	Chev	461	Ford	399	Plym	57	Dodge	27	Pontiac	22	N-WO	9	Chrysler	8	DS-R	7	Essex	6	B-R	5
Conn.	970	Ford	207	Chev	203	Plym	72	Buick	63	Essex	60	Pontiac	58	DS-R	33	Chrysler	29	Packard	28	Dodge	26
Delaware	170	Ford	67	Chev	38	Pontiac	13	Plym	11	Buick	7	Olds	6	E-S	5	DS-WO	3	Hu-N-Pa	2	*	1
Florida	965	Ford	350	Chev	216	Plym	78	Pontiac	29	Essex	27	Buick	17	Dodge	15	Olds	12	Auburn	11	Chrysler	10
Georgia	1012	Ford	400	Chev	293	Buick	42	Plym	38	Dodge	28	Rockne	24	Pontiac	23	Essex	19	O-H	13	WO	12
Idaho	74	Ford	23	Chev	19	Plym	13	Dodge	4	B-G	3	Olds	2	*	1						
Illinois	2979	Ford	917	Chev	638	Plym	250	Pontiac	120	Buick	113	E-WO	97	De Soto	91	Olds	89	Stude	67	Chrysler	65
Indiana	1251	Ford	396	Chev	308	Plym	98	Essex	55	Olds	49	DS-Po	46	WO	43	Buick	30	Ch-D-G-R	25	Pa-S	12
Kansas	1321	Ford	440	Chev	437	Plym	84	Essex	60	Pontiac	50	Rockne	28	WO	26	Dodge	24	DS-O	22	Buick	21
Maryl'd	1018	Ford	322	Chev	284	Plym	54	Pontiac	51	Olds	31	Rockne	30	Buick	28	Chrysler	27	DS-D-E	24	WO	23
Mich.	2165	Ford	761	Chev	472	Plym	146	Pontiac	113	Essex	95	Buick	75	Olds	74	Rockne	51	D-WO	44	De Soto	40
Minn.	1263	Ford	381	Chev	369	Plym	95	B-O-Po-R	42	WO	35	Essex	34	CH-Pa	24	Dodge	22	G-S	17	Hupp	16
Montana	262	Ford	86	Chev	65	Pontiac	28	Plym	14	B-O	10	Essex	8	Chrysler	7	D-WO	5	D-G-S	4	DS	3
N. Hamp.	275	Ford	83	Chev.	59	Plym	34	E-Po	14	Buick	11	Rockne	10	WO	8	Nash	6	CH-DS	5	D-S	4
N. Car.	1701	Ford	734	Chev	540	Plym	85	Essex	53	Pontiac	46	Olds	32	Buick	31	Dodge	27	CH-WO	16	A-R	13
N Dak.	191	Ford	70	Chev	64	Plym	22	Pontiac	7	B-E	5	Nash	4	CH-D-O-WO	3	H-Re	1				
R. Island	472	Ford	103	Chev	99	Plym	39	Buick	29	Pontiac	28	Chrysler	25	Essex	21	De Soto	20	R-WO	14	Stude	11
S C'lina	647	Ford	258	Chev	221	Plym	25	Essex	23	D-Po	16	Buick	12	DS-O	10	Auburn	7	Ch-Pa	5	Rockne	4
S. Dakota	188	Chev	57	Ford	54	Plym	18	Dodge	9	Rockne	8	E-O	7	Pontiac	6	B-WO	4	†	2	*	1
Utah	153	Ford	43	Chev	36	Plym	15	Essex	12	Pontiac	8	De Soto	6	Rockne	4	**	3	H-O-Pa-Re	2	DV-F-L	1
Vermont	192	Ford	44	Chev	39	E-Plym	16	Pontiac	12	B-D	10	WO	9	Chrysler	6	G-N-O	4	Hu-R	3	A-S	2
Virgina	1285	Ford	546	Chev	343	Pontiac	63	Plym	53	Essex	49	Buick	35	WO	27	DS-D	22	O-R	19	Stude	17
W. Va.	666	Ford	207	Chev	153	Plym	57	Essex	39	Dodge	27	Pontiac	26	Rockne	21	WO	20	Graham	19	Olds	17
Wisc.	903	Ford	264	Chev	197	Plym	85	Pontiac	48	WO	45	Olds	37	Essex	35	Buick	29	Chrysler	19	Nash	17
D. of C.	812	Ford	287	Chev	199	Pontiac	73	Buick	34	Olds	31	Plym	27	Essex	21	Stude	19	Packard	17	Dodge	16

SEPT., State	1932 Sales	First		Second		Third		Fourth		Fifth		Sixth		Seventh		Eighth		Ninth		Tenth	
Ark	371	Ford	158	Chev	149	Plym	22	B-R	5	DS-D-N-Po-WO	4	CH-O-S	2	A-C-E-G-Pa	1	—	—	—	—	—	—
Conn.	1271	Ford	302	Chev	280	Plym	168	Pontiac	71	Essex	70	Buick	53	CH-R	36	De Soto	34	Olds	24	Stude	23
Delaware	213	Ford	73	Chev	60	Plym	21	B-Po	10	Olds	6	Ch-E	5	R-S	4	N-Pa	3	DS-D-WO	2	C-LS	1
Florida	1135	Ford	410	Chev	303	Plym	80	Essex	39	Pontiac	33	Chry	25	Buick	17	G-O	13	A-D	9	De Soto	8
Georgia	1183	Ford	468	Chev	378	Plym	53	B-Po	36	Essex	28	D-R	19	Stude	16	WO	15	Ch-O	14	Graham	10
Idaho	115	Chev	44	Ford	39	Plym	6	Olds	4	E-N	3	*	2	A-C-R	1						
Illinois	4325	Ford	1291	Chev	967	Plym	595	Pontiac	165	Essex	142	De Soto	115	Olds	103	Buick	99	WO	93	Stude	91
Indiana	2231	Ford	725	Chev	554	Plym	238	Essex	113	De Soto	74	Pontiac	70	WO	65	Rockne	62	Buick	49	Olds	48
Kansas	1786	Ford	652	Chev	550	Plym	144	Essex	95	Pontiac	66	WO	39	Rockne	33	Buick	28	Olds	27	Dodge	24
Maryl'd	1381	Chev	505	Ford	423	Plym	93	Pontiac	48	E-R	39	Buick	33	De Soto	24	Olds	23	Graham	22	Stude	21
Mich.	3478	Ford	1310	Chev	775	Plym	285	Essex	211	Pontiac	140	Olds	104	Rockne	69	Buick	67	De Soto	65	Graham	58
Minn.	1457	Chev	483	Ford	434	Plym	148	Pontiac	43	Rockne	39	Olds	36	Buick	35	Essex	34	WO	33	Stude	26
Montana	236	Ford	80	Chev	69	Plym	27	Pontiac	10	Buick	8	E-N-WO	6	O-R	5	Franklin	3	G-S	2	*	1
N. Hamp.	453	Ford	129	Chev	124	Plym	48	Essex	27	Pontiac	19	B-R	17	Chrysler	11	G-N	9	WO	8	De Soto	7
N. Car.	1200	Ford	497	Chev	416	Plym	66	Essex	52	Chrysler	26	Pontiac	18	B-O	14	Dodge	11	Stude	10	De Soto	9
N. Dak.	285	Ford	114	Chev	99	Plym	24	Rockne	11	B-O-S	6	DS-WO	4	D-E	3	*	1				
R. Island	545	Ford	134	Chev	90	Plym	64	Pontiac	48	Essex	31	Buick	30	De Soto	21	R-WO	17	CH-D-N-S	11	G	10
S. C'lina	662	Ford	314	Chev	219	Plym	31	Essex	20	Pontiac	17	Chry	10	Dodge	6	B-DS-H-R	5	A-Hu-O-WO	3	Reo	2
S Dakota	302	Chev	104	Ford	101	Plym	25	Rockne	13	Olds	12	Essex	9	CH-D	7	Pontiac	6	B-WO	4	Nash	3
Utah	236	Ford	72	Chev	66	Plym	18	Essex	17	Pontiac	11	Graham	10	De Soto	8	Packard	6	B-D-O	5	Rockne	3
Vermont	294	Ford	77	Chev	67	Plym	31	Essex	24	Pontiac	14	B-O	11	WO	9	Packard	7	Rockne	6	DS-G	5
Virginia	1726	Ford	744	Chev	508	Plym	88	Essex	73	Pontiac	64	De Soto	35	Dodge	31	Buick	30	WO	28	Graham	22
W. Va.	773	Ford	271	Chev	209	Plym	83	WO	31	Essex	30	Dodge	29	Pontiac	21	Chry	16	Rockne	14	Graham	11
Wisc.	1596	Ford	432	Chev	413	Plym	185	Essex	88	Pontiac	61	Olds	49	WO	48	B-N	41	Stude	34	De Soto	33
D. of C.	893	Ford	329	Chev	239	Pontiac	60	Essex	34	Plym	27	Buick	25	Stude	22	G-O	17	C-D	15	A-N-Pa-R	13

KEY TO ABBREVIATIONS AND SYMBOLS

A—Auburn, B—Buick, C—Cadillac, Ch—Chrysler, DV—De Vaux, DS—De Soto, D—Dodge, E—Essex, F—Franklin, G—Graham, H—Hupmobile, Hu—Hudson, LS—La Salle, L—Lincoln, N—Nash, O—Oldsmobile, Pa—Packard, Po—Pontiac, Re—Reo, R—Rockne, S—Studebaker, WK—Willys-Knight, WO—Willys-Overland. *All cars in this position registered only one. **Buick, Dodge, Hudson, Nash, Studebaker and Willys-Overland. *—Buick, Cadillac, De Soto, Dodge, Graham and Pontiac. †Auburn, Chrysler, Graham and Hudson.

Production--Engineering--Factory

AIR INJECTION IS EMPLOYED IN NEW TYPE ENGINE

This is the second installment of a paper by Alfred Schwartz, consulting engineer Fuel Oil Motor Corporation, read before the Maine division, Metropolitan section, S. A. E. recently.

The problem is to increase the pressure without increasing temperature beyond certain limits. It is desirable to increase the available oxygen but avoid preferential burning of the hydrogen, leaving the unburned carbon back as carbon monoxide or smoke.

In three years of research work I have converted engines of ordinary types, such as a Palmer two-cylinder T-head engine rated at 12 h. p. After conversion it produced 23 h. p. with air injection, at 800 r. p. m. A Ford, Model A, that normally developed 22.5 h. p. at 1,000 r. p. m., when operated on air injection produced 30.2 h. p. on gasoline and 21 h. p. on fuel oil. A Buick engine, at 1,000 r. p. m., developed 29 h. p., whereas with air injection it developed 34.5 h. p., both on gasoline and on fuel oil.

A Novo single--cylinder engine, rated 3 h. p. at 1000 r. p. m., developed an air injection 5 h. p. on fuel oil and on gasoline. The fuel consumption on gasoline was 0.9 pound per horsepower hour, without air injection, and 0.55 pound per horsepower hour with air injection on fuel oil. Without air injection it would not run at all on fuel oil. A Buda engine at 1,000 r. p. m. normally developing 18.5 h. p. on gasoline, with air injection developed 23.5 h. p. on gasoline and 23.8 h. p. on fuel oil, with an original fuel consumption on gasoline, without air injecaion, of 0.68 pounds, and with air injection, 0.52 pound. It could not be operated on fuel oil without air injection, but showed a fuel consumption of fuel oil of 0.52 pound per horsepower hour with air injection.

All of these commercial engines have heavy reciprocating parts, yet they produced power and fuel consumption equal to the best aviation engines when air- injecton was used. If a construction similar to that of aviation engines were employed, correspondingly better results could be expected. The mean effective pressure with air injection ranges from 127 to 181 pounds per square inch, and when the principle is once thoroughly understood we may expect mean effective pressures exceeding 200 pounds.

In the injection engine the higher compression is due solely to the additional volume of air injected into the combustion chamber, the engine already having a maximum permissible compression for normal operation on gasoline. The additional air is used to consume the tail ends of the fuel which would not otherwise be burned. A further important effect is the material raising of the volumetric efficiency of the engine. The amount of extra air injected may vary from as low as 20 to as high as 50 per cent. or more of the piston displacement. This should not be confused with supercharging, for with a supercharger all of the air is pre-mixed with the fuel, whereas in the air injection engine the injected air is not mixed with fuel.

It will thus be seen that commercial engines of standard design, compressing their own air, have been operated on fuel oil with an increase in horse power of approximately 25 per cent. and a saving in fuel consumption of 25 per cent. by weight, but a saving in money of 80 per cent., as compared with gasoline figured at 14 cents per gallon and fuel oil at 4 cents per gallon.

On partial load conventional engines consume from one to several pounds of fuel per horse-power hour, but consumption with air injection is at practically the same rate as with full load. This is an important item, making it possible to operate engines on partial load with maximum economy.

A mean indicated pressure of 127 to 181 pounds has been produced by engines having an original mean effective pressure under 100 pounds. This compares favorably with Diesel engines which, in accordance with standard publications, show a brake mean effective pressure of from 65 to 95 pounds and an indicated pressure of from 90 to 150 pounds.

The engines used in the experiments described were produced at a cost of $3 to $5 per horse power, as

(Continued on Page 10)

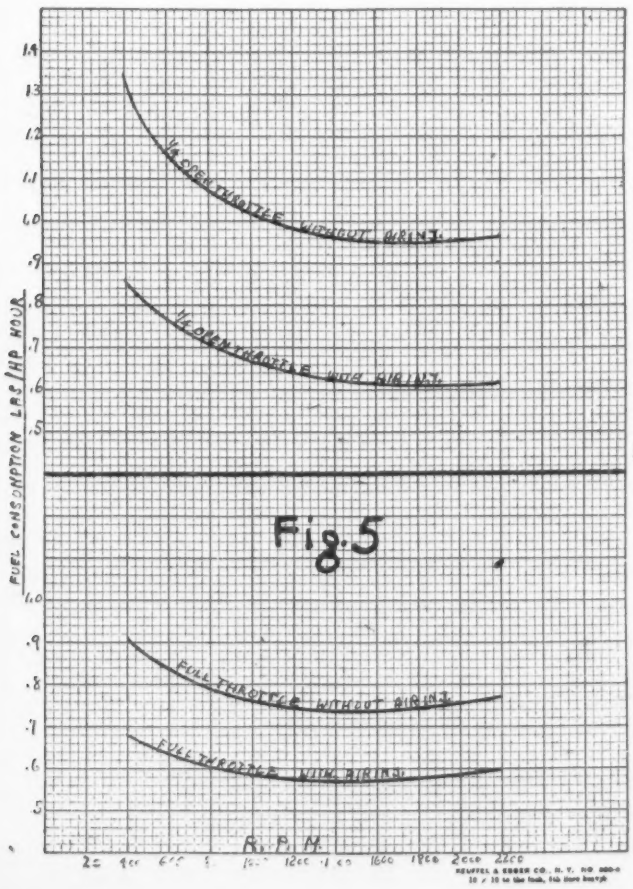

FUEL CONSUMPTION LBS/HP HOUR
1/4 OPEN THROTTLE WITHOUT AIR INJ.
1/4 OPEN THROTTLE WITH AIR INJ.
FULL THROTTLE WITHOUT AIR INJ.
FULL THROTTLE WITH AIR INJ.
R. P. M.
17

Fig. 5

Williams New Offset Sliding T Handle S-20C

A new type offset sliding T handle now is being produced by J. H. Williams & Co. It is claimed to substitute one tool for two. Its catalogue title is Offset Sliding T Handle S-20C.

It is especially designed for work in close, cramped quarters such as occur around the motor, transmission, clutch, etc., where the swing of any wrench is extremely limited.

One end of the sliding handle is slightly offset (7½ degrees) and can be revolved in the head, where it is indexed in two positions. Hence the grip end of the handle can be changed from one side to the other without removing the tool from the socket.

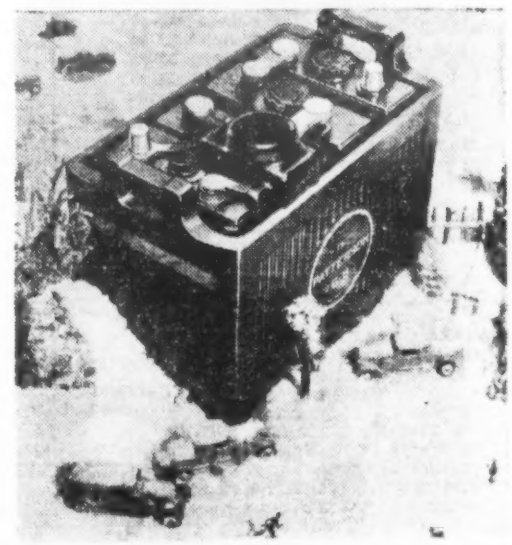
This provision reduces the minimum operating swing of 30 degrees, required by conventional handles when using 12-point sockets to only 15 degrees for this superior tool. This splits the operating angle in half, a gain in efficiency of 50 per cent.

Complete details may be had either through J. H. Williams & Co.'s jobbers or from the main offices at 75 Spring St., New York city.

TOLEDO STEEL EXHIBITS AT JOINT TRADE SHOW

The Toledo Steel Products Company, manufacturers of Toledo super-forged valves, have reserved booths Nos. 12, 13 and 14 for the annual N. S. P. A.-M. E. A. show, to be held at Detroit, December 5-10. Included in the Toledo display will be Toledo super-forged valves, Toledo blue print bolts and bushings and Toledo water pump parts.

New Type 6-8 Volt Storage Battery



The Patterson Manufacturing Company of Dennison, O., has announced a dual-voltage storage battery designed to overcome hard-starting during winter months.

The battery is so constructed that it becomes an eight-volt unit for starting. Under normal operating conditions it is a conventional 6-volt unit.

This dual-voltage feature is made possible by grouping the conventional number of plates into four cells instead of three and holding the last two cells in parallel by means of an electro-magnetic switch. This means that under normal operating conditions two of the cells give up two volts apiece and the other two (which are in parallel) only give a total of 2 volts, thus making 6 volts.

When a cold motor must be started, a push button on the dash operates the electro-magnetic switch and makes the connection that changes the last two cells from parallel to series, thus increasing the power of the battery from 6 to 8 volts.

This change increases the starting power of the battery about 75 per cent. (the exact electrical formula shows 77.7 per cent.) and insures a high r. p. m. of the starting motor and a hot, "fat" spark in the combustion chamber.

The patents on this battery are at present owned and controlled by the Patterson Manufacturing Company of Dennison, O. Plans are now under way to assign these patents to a holding company whose function will be to license battery manufacturers to build this type of unit; supply the electro - magenetic switches; and carry on a national advertising campaign.

Current and Future Developments In Chromium Plating Abroad

Considerable new work in chromium plating prosecuted in England, Germany and South Africa, have, according to a recent article by C. Campbell in The Automobile Engineer, London, produced results that are described as almost phenomenal.

It is expected that the cost of such plating will be considerably reduced, partly through the reduction in the time required for the plating operation. A major part of the article, which is produced almost in full herewith, deals, however, with current practice, presumably in British plating plants, and may well be studied by all interested in the subject. The article follows:

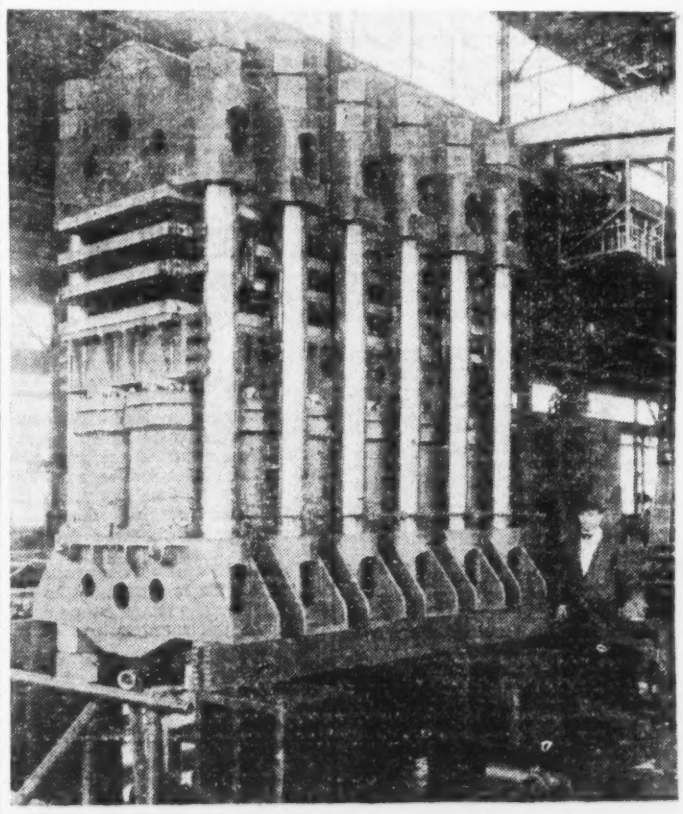
Probably no development in the history of electro-plating has gained such rapid popularity as that of chromium plating, although it is only comparatively recently that really successful results have been attained. To insure satisfactory results with chromium it is essential to have a sound grip on the theories underlying the reactions involved, otherwise trouble is certain to be experienced sooner or later. Trouble was experienced in the first instance as it was not clearly understood that it is necessary to have chromium present in two valencies. Continued success is not likely to be met unless all the connected theories are fully understood.

Originally chromium was deposited on copper articles or work on which a preliminary coating of copper was first deposited. Recently, however, articles of iron, nickel and other metals have been successfully plated.

After wide investigations were completed it was realized that chromium chloride and chromium sulphate alone were of little value as electrolytes. Best results are now secured from a solution of chromic acid which contains a small proportion of chromium sulphate. The deposition of chromium from this mixed solution theoretically comes from two sources. A film of what is known as basic chromic chromate is formed

(Continued on Page 12)

Large Steam Platen Press



ABOVE is a photo of what is claimed to be the heaviest tonnage steam platen press ever built, and which was described recently in Automotive Daily News. It was built by the Lake Erie Engineering Corporation.

TIRE DEALERS FEEL COMPETITION, TAXES AND USED TIRES

(Continued from Page 1)

and statistics on the possibilities of tire inspection, as well as to secure a model law requiring tire inspection for consideration by the different state groups.

In this the danger of using old and wornout tires was sharply emphasized.

Regarding Federal taxation, dealers reported that they must either absorb the Federal tax on tires as passed on by the manufacturers or lose their state and municipal business.

Addresses by P. B. Means of the Firestone Tire and Rubber Company and Frank A. Seiberling, president of the Seiberling Rubber Company, featured the Tuesday afternoon session, Mr. Means stressing the necessity of the tire dealer handling batteries and other accessories to supplement his tire business and give service to his customers in order to make a profit under present conditions, and Mr. Seiberling expressing confidence in the future of the independent tire dealer who would put into practice real merchandising methods in his business.

The session was well attended and the discussions aroused a great deal of interest among the members.

CAR OWNERS DENIED RIGHT TO REFUND ON LOWER FREIGHT RATES

(Continued from Page 1)

himself in every instance and if he should tell a customer how much the freight amounted to on his particular purchase it had no bearing on the transaction.

The court in sustaining the demurrer of the dealers, said it was not at all clear to him that plaintiffs were entitled to recover the refund on the freight. He gave their attorneys two days in which to find any case which supported their claims, but no case was presented, and the case was closed.

DEPRESSION LESSONS CHART FOR FUTURE

(Continued from Page 4)

The outlook for the industry, in fact, depends on just two things—less selfishness and more co-operation. When facotries and dealers both put mutual service ahead of individual advantage both will begin to prosper. There's a sales harvest coming some day whatever they do, but it will be a disaster instead of a blessing unless those who ought to profit by it have learned that in a world so closely knit as ours no man and no corporation can hog it all, and that year in and year out we shall all be better off for working in a live-and-let-live spirit and thinking in terms of the industry's welfare rather than solely of our own.

This, in fact, is our forecast concerning industry in general in these United States. Conditions will change. Employment will pick up. A buying wave will supersede the present wave of thrift. Sales volumes will mount in all lines.

But unless we have learned how to turn sales into profits a renewal of buying will only mean more work without more gain. If our sales of that era are bought at each other's expense, as sales in so many lines are at this fatuous stage, we will only succeed in speeding up the treadmill without escaping from its limitations.

With greater poise and broader vision, the automotive outlook may be very bright indeed. But if the old expediency prevails when times speed up—there's nothing to it.

If we are big enough to cast aside the opportunist's false and outworn creed and set the Golden Rule up in its place we shall progress beyond our highest present hopes. But if we try to muddle on along the same old lines—don't kid yourself. Our best days are behind us.

MAJOR SPECIFICATIONS AND MECHANICAL DETAILS

Make and Model	Weight—S. P. Sedan	Wheel Base	Engine Make	Thermostat Used	Valve Arrangement	Cylinders	Bore and Stroke	Piston Disp.	Compression Ratio	Tax H. P.	Brake, H.P. and Peak R. P. M.	Pist. Make or Material	No. Main Br.	Oil Purifier	Fuel Cleaner	Carburetor	Air Cleaner
Auburn 8-100	3675	127-136	Lyc	Dole	L	8	3 x4¾	268.5	5.26	28.8	100@3400	*Alum	5	Pur	No	Str	AC
Auburn 12-160	4465	133	Lyc	Dole	HO	12	3⅛x4¼	391.1	5.50	46.8	160@3400	*Alum	4	Pur	Ste	Str	AC
Austin	§1150	75	Own	No	L	4	2.2 x3	45.6	5.10	7.80	13@3000	*Alum	2	No	No	Til	No
Buick 32-50	3450	114	Own	Bish-Bab	O	8	2⅞x4¼	230.4	5.09	27.61	82@3200	CI	5	AC	AC	Mar	AC
Buick 32-60	3980	118	Own	Bish-Bab	O	8	3⅛x4⅝	272.6	5.03	30.02	95@3000	CI	5	AC	AC	Mar	AC
Buick 32-80	4450	126	Own	Bish-Bab	O	8	3⅜x5	344.8	4.80	35.12	113@3200	CI	5	AC	AC	Mar	AC
Buick 32-90	4565	134	Own	Bish-Bab	O	8	3⅜x5	344.8	4.80	35.12	113@3200	CI	5	AC	AC	Mar	AC
Cadillac 355 B	4885	134-140	Own	Har	L	8	3⅝x4½	353.0	5.38	36.4	115@3000	CI	3	AC	AC	Own	AC
Cadillac 370 B	5175	134-140	Own	Har	O	12	3⅛x4	368.0	5.30	46.9	135@3400	CI	4	Cuno	AC	DL	AC
Cadillac 452 B	5625	143-149	Own	Har	O	16	3 x4	452.0	5.36	57.5	165@3400	CI	5	Cuno	AC	DL	AC
Chevrolet	2770	109	Own	No	O	6	3⅛x3¾	194.0	2.50	26.3	60@3000	CI	3	No	Yes	Car	AC
Chrysler 6	3120	116	§Own	Yes	L	6	3¼x4½	223.9	5.35	25.35	82@3400	*Alum	4	Pur	Yes	*B&F	Yes
Chrysler 8	3860	125	§Own	Yes	L	8	3¼x4½	298.6	5.20	33.80	100@3400	*Alum	5	Pur	Yes	Str	Yes
Chrysler Imp. 8	—	135	§Own	Yes	L	8	3½x5	384.8	5.20	39.20	125@3200	*Alum	9	Pur	Yes	Str	Yes
Chrysler Imp. 8 cus.	—	146	§Own	Yes	L	8	3½x5	384.8	5.20	39.20	125@3200	*Alum	9	Pur	Yes	Str	Yes
Cord (Fr. Wh. D.)	4620	137½	Lyc	Dole	L	8	3¼x4½	298.6	5.25	33.8	115@3300	*Alum	5	Pur	AC	Sch	No
De Soto Six	3008	113	§Own	Yes	L	6	3¼x4¼	211.5	5.35	25.35	75@3400	*Alum	4	Pur	Yes	*B&B	Yes
De Vaux 6-80	2810	114	Con	Dole	L	6	3⅜x4	214.7	5.20	27.34	75@3600	Alum	4	—	Yes	Til	AC
Dodge Six F L	3084	114¼	§Own	Yes	L	6	3¼x4⅜	217.7	5.35	25.35	79@3400	*Alum	4	Pur	Yes	Car	Yes
Dodge Eight D K	3488	122	§Own	Yes	L	8	3¼x4¼	282.1	6.20	33.80	100@3400	*Alum	5	Pur	Yes	Str	Yes
Essex Terraplane	2400	106	Own	—	L	6	2⅞x4¾	193.0	5.80	20.7	70@3200	Alum	3	No	Yes	Car	Yes
Essex-Gr. Su. 6 Std.	2870	113	†Own	No	L	6	2⅞x4¾	193.0	5.50	20.7	70@3200	Alum	3	No	Ste	Mar	AC
Ford A	2357	106	Own	No	L	4	3⅞x4¼	200.5	4.60	24.03	50@2600	Alum	3	—	—	Zen	—
Ford V8	†2447	106	Own	No	L	8	3⅛x3¾	220.0	5.50	30.0	65@3400	Alum	3	—	—	DL	—
Franklin Olympic	3600	118	*Own	Yes	O	6	3½x4¾	274.0	5.12	29.4	100@3100	Alum	7	Yes	Yes	Str	AC
Franklin Series 16	—	132	*Own	Ful	O	6	3½x4¾	274.0	5.12	29.4	100@3100	*Alum	7	Pur	Yes	Str	Yes
Franklin V-12	—	144	*Own	Ful	O	12	3¼x4	398.0	5.12	50.8	150@3100	*Alum	7	Pur	Yes	Str	Yes
Graham 6 (1933)	—	118	Own	Yes	L	6	3¼x4½	224.0	6.50	25.35	80@3400	*Alum	7	No	AC	Sch	AC
Graham 6	3205	113	Own	Yes	L	6	3¼x4½	207.0	5.45	23.4	70@3200	*Alum	7	No	AC	Sch	AC
Graham 8	3665	123	Own	Bish-Bab	L	8	3⅛x4	245.4	6.50	31.25	90@3400	*Alum	5	AC	AC	DL	AC
Hudson Gr. 8 Std.	†3270	119-126-132	†Own	No	L	8	3 x4½	254.1	5.80	28.8	101@3600	Alum	5	No	Ste	Mar	AC
Hupmobile 216	3115	116	Own	Bish-Bab	L	6	3⅜x4¼	228.1	5.00	27.34	75@3200	*Alum	4	**	Ste	Str	AC
Hupmobile 222	3580	122	Own	Bish-Bab	L	8	2⅞x4⅝	250.7	5.40	27.61	93@3200	Alum	5	Pur	Ste	Str	AC
Hupmobile 226	3755	126	Own	Bish-Bab	L	8	3⅛x4¾	279.9	5.47	30.10	103@3200	Alum	5	Pur	Ste	Str	AC
La Salle 345 B	4840	130-136	Own	Har	L	8	3⅜x4½	353.0	5.38	36.4	115@3000	CI	3	AC	AC	Own	AC
Lincoln V-8	5430	136	Own	Yes	L	8	3½x5	384.0	5.23	39.2	125@2900	Alum	5	No	AC	Str	AC
Lincoln V-12	5750	145	Own	Yes	L	12	3¼x4½	448.0	5.25	50.7	150@3400	Alum	7	No	AC	Str	AC
Marmon 8	3500	125	Own	Yes	L	8	3¼x4¾	315.2	5.50	33.8	125@3400	Alum	5	Flo	AC	Str	AC
Marmon 16	5360	145	Own	Pines	O	16	3⅛x4	490.8	5.75	62.5	200@3400	Alum	5	†	AC	Str	AC
Nash Big Six	3200	116	Own	Bish-Bab	L	6	3⅛x4⅜	201.3	5.10	23.4	70@3000	*Alum	7	Pur	AC	Str	AC
Nash Stand. Eight	3400	121	Own	Bish-Bab	L	8	3 x4⅜	247.4	5.10	28.8	85@3200	*Alum	9	Pur	AC	Str	AC
Nash Spec. Eight	3870	128	Own	Bish-Bab	O	8	3⅛x4¼	260.8	5.25	31.2	100@3400	*Alum	9	Pur	AC	Str	AC
Nash Adv. Eight	4350	133	Own	Bish-Bab	O	8	3⅜x4½	322.0	5.25	36.4	125@3600	*Alum	9	Pur	AC	Str	AC
Nash Ambas. Eight	4510	142	Own	Bish-Bab	O	8	3⅜x4½	322.0	5.25	36.4	125@3600	*Alum	9	Pur	AC	Str	AC
Oldsmobile F-32	3035	116½	Own	No	L	6	3⅛x4⅛	213.3	5.80	26.3	74@3200	CI	4	AC	AC	Str	AC
Oldsmobile L-32	3165	116½	Own	No	L	8	3 x4¼	240.3	5.90	28.8	87@3350	CI	5	AC	AC	Str	AC
Packard Twin Six	5635	142⅛-147⅛	Own	Yes	L	12	3⅞x4	445.5	6.00	56.7	160@3200	*Alum	4	Yes	Yes	Own	AC
Packard Std. 8	4570	130-137	Own	Yes	L	8	3⅝x5	320.0	6.00	32.5	110@3200	*Alum	9	Yes	Yes	Own	AC
Packard De L. 8	5045	142-147	Own	Yes	L	8	3½x5	384.8	6.00	39.2	135@3200	*Alum	9	Yes	Yes	Own	AC
Packard Light 8	4115	127¾	Own	Yes	L	8	3⅜x5	320.0	6.00	32.50	110@3200	*Alum	9	Yes	Yes	Own	AC
Pierce-Arrow 54	4819	137-142	Own	Pines	L	8	3½x4¾	366.0	5.05	39.2	125@3000	*Alum	9	Pur	Ste	Str	AC
Pierce-Arrow 52	5080	142-147	Own	Pines	L	12	3⅜x4	429.0	5.05	54.6	150@3200	*Alum	7	Pur	Ste	Str	AC
Pierce-Arrow 53	5395	137-142	Own	Pines	L	12	3¼x4	398.0	5.05	50.7	140@3200	*Alum	7	Pur	Ste	Str	AC
Plymouth 6	2553	107	§Own	—	L	6	3⅛x4⅛	189.8	5.50	23.44	70@3600	Alum	4	Yes	Yes	Own	Yes
Pontiac 6	2870	114	Own	Yes	L	6	3⅛x3⅞	200.0	5.10	26.3	65@3200	CI	3	No	AC	Mar	Yes
Pontiac V-8	3225	117	Own	Yes	H	8	3⅛x3⅜	251.0	5.20	37.8	85@3200	CI	3	No	AC	Mar	Yes
Reo Fly. Cloud "S"	3405	117	Own	Yes	L	6	3⅛x5	230.0	5.30	23.4	80@3200	Lo-Ex	7	Yes	Yes	Zen	Yes
Reo Royale Cust.	4650	135	Own	Pines	L	8	3⅜x5	358.0	5.30	36.48	125@3300	Alum	9	Han	AC	Sch	Own
Reo Royale	4375	131	Own	Pines	L	8	3⅜x5	358.0	5.30	36.48	125@3300	Alum	9	Han	AC	Sch	Own
Reo 8-25	4050	125	Own	Yes	L	8	3 x4¾	268.6	5.37	28.8	90@3300	*Alum	5	Han	V S	Sch	Un
Rockne 6-65	2595	110	Own	Dole	L	6	3⅛x4⅛	189.8	5.00	23.4	66@3200	CI	4	No	AC	Str	No
Rockne 6-75	3000	114	Own	Dole	L	6	3¼x4⅛	205.3	5.00	25.4	72@3200	CI	4	Own	AC	Str	No
Studebaker 6-55	3170	117	Own	Dole	L	6	3¼x4⅝	230.0	5.00	25.4	80@3200	CI	4	No	Ste	Str	No
Studebaker Dict. 62	3240	117	Own	Bish-Bab	L	8	3⅛x3¾	221.0	5.00	30.0	85@3200	CI	9	Pur	Ste	Str	AC
Studebaker Com. 71	3545	125	Own	Bish-Bab	L	8	3⅛x4¼	250.4	5.20	30.0	101@3200	*Alum	9	Pur	Ste	Str	AC
Studebaker Pres. 91	4260	135	Own	Dole	L	8	3½x4⅜	337.0	5.10	39.2	122@3200	*Alum	9	Han	Ste	Str	AM
Stutz LAA	4383	127½	Own	No	O	6	3⅜x4½	241.5	5.50	27.3	85@3150	*Alum	7	Pur	AC	Zen	UN
Stutz SV-16	4885	134½-145	Own	No	O	8	3⅜x4⅛	322.0	5.10	36.4	156@3900	*Alum	9	Pur	AC	Zen	AM
Stutz DV-32	*5281	134½-145	Own	Bish-Bab	O	8	3⅜x4½	322.0	5.50	36.4	113@3300	*Alum	9	Pur	Ste	Str	AC
Will.-Ov'land 6-90A	2814	113	Own	Yes	L	6	3¼x3⅞	193.0	5.26	25.35	65@3400	CI	4	No	AC	Til	Til
Will.-Ov'land 8-88A	3250	121	Own	Yes	L	8	3⅛x4	245.4	5.36	31.25	80@3200	CI	5	No	AC	Til	AC
Willys-Knight 66E	3775	121	Own	Yes	K	6	3⅜x4¾	255.0	5.50	27.34	87@3200	*Alum	7	Pur	Til	Til	AC

N. Y. PENNSYLVANIA PLANTS CONTINUE TRADE UPSWING

(Continued from Page 1)

ada have registered, and report the outlook for general business as good. Furniture manufacturers, both wood and metal, have resumed production in their plants, recalling many men to full-time working sheets. In some instances, factories are operating overtime.

The metal working companies also report a wide improvement in general business. Those concerns engaged in the manufacture of material and equipment for the automobile industry expect definite releases on orders for the new 1933 models before the end of the year.

Legitimate automobile dealers in the territory view the outlook for the coming year with optimism. Stocks of used cars have been depleted for several weeks and they expect, from inquiries and improvement in general business, to do a highly satisfying volume of new car business during the first half of the coming year.

AIR INJECTION IS EMPLOYED IN NEW TYPE OF ENGINE

(Continued from Page 9)

compared with Diesel engines costing more than $40 per horse power. Compression ratios as high as 9 to 1 have been used, and even higher compression ratios have been applied. This, of course, would not be possible if the heat of compression had not been reduced by injection. A ratio of 9 to 1, for example, would be about 270 pounds pressure and 800 degrees Fahrenheit. This would pre-ignite any fuel, particularly fuel oil, which permits the use of only a 4 to 1 compression, equivalent to about 80 pounds compression pressure and a 450 degrees temperature.

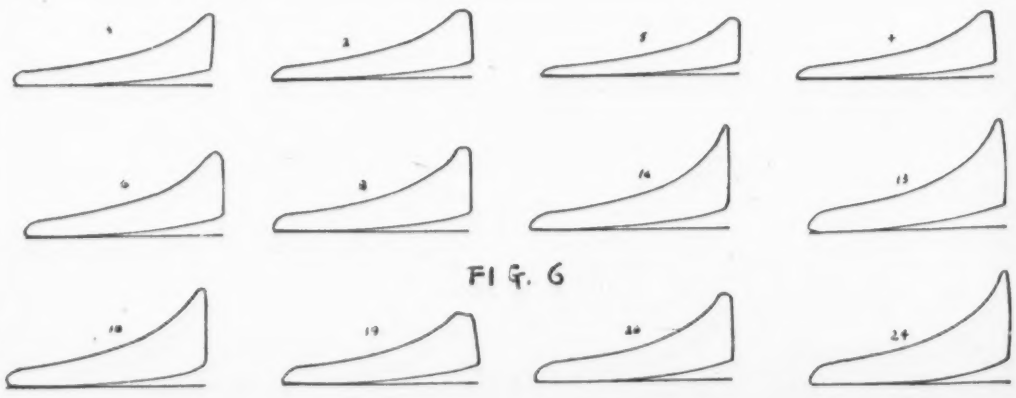


FIG. 6

CLASSIFIED ADVERTISEMENTS IN THE AUTOMOTIVE DAILY NEWS BRING RESULTS

OF PRESENT AMERICAN PASSENGER CAR MODELS

Make and Model	Front End Drive	Ignition System	Gen. and Starter	Clutch	Transmission Make	Transmission Speeds	Transmission Type	Universals	Rear Axle	Ratio	Brakes	Steering Gear	Springs Rear	Spring Shackles	Chassis Lubric.	Tires
Auburn 8-100	Chain	Del-R	*Del-R-S	Long	D	3	SM-LGS-F	U	Col	*4.70	M	Ross	S 56¾	Own	Bijur	*17x5.50
Auburn 12-160	Link	Del-R	*Del-R-S	Long	D	3	SM-LGS-F	M	Col ½	*4.08	Bendix	Ross	S 56¾	Own	Bijur	*17x6.00
Austin	Gear	Aut-L	*Aut-L	Rock	WG	3	——	S	Sal ½	5.25	M	Say-B	Cant	Own	Al-Z	18x3.75
Buick 32-50	Tex	Del-R	Del-R	*Own	O	3	SM-Own-F	O	Own ½	4.60	Own	Sag	S 56	Own	Al-Z	18x5.50
Buick 32-60	Tex	Del-R	Del-R	*Own	O	3	SM-Own-F	O	Own ⅝	4.54	Own	Sag	S 55¼	Own	Al-Z	18x6.00
Buick 32-80	Tex	Del-R	Del-R	*Own	O	3	SM-Own-F	O	Own ¾	4.27	Own	Sag	S 58⅞	Own	Al-Z	18x7.00
Buick 32-90	Tex	Del-R	Del-R	*Own	O	3	SM-Own-F	O	Own ¾	4.36	Own	Sag	S 58⅞	Own	Al-Z	18x7.00
Cadillac 355 B	Morse	Del-R	Del-R	*Own	O	3	SM	S	Own ¾	4.60	Own M	Sag	S 58	Own	Alem	17x7.00
Cadillac 370 B	Morse	Del-R	Del-R	*Own	O	3	SM	S	Own ¾	4.80	Own M	Sag	S 58	Own	Alem	17x7.50
Cadillac 452 B	Morse	Del-R	Del-R	*Own	O	3	SM	S	Own ¾	4.64	Own M	Sag	S 60	Own	Alem	18x7.50
Chevrolet	Gear	Del-R	*Del-R	Own	O	3	SM-F	—	Own ½	4.10	M	Own	S 54	Own	Alem	18x5.25
Chrysler 6	Chain	Del-R	Del-R	†—	O	3	O-F	—	Own ½	4.60	H	Own	S 53⅜	——	Alem	18x5.50
Chrysler 8	Chain	Del-R	Del-R	*—	O	4	O-F	—	Own ½	4.30	H	Gem	S 54⅝	——	Al-Z	17x6.50
Chrysler Imp. 8	Chain	Del-R	Del-R	*—	O	4	O-F	—	Own ½	4.10	H	Gem	S 57½	——	Al-Z	17x7.00
Chrysler Imp. 8 cus.	Chain	Del-R	Del-R	*—	O	4	O-F	—	Own ½	4.10	H	Gem	S 57½	——	Al-Z	17x7.50
Cord (Fr. Wh. Dr.)	Link	Del-R	*Del-R	Long	D	3	——	*	Col F	4.80	H	Gem	S 62	Own	Bijur	18x7.00
De Soto Six	Chain	Del-R	Del-R	†Own	O	3	O-F	—	Own ½	4.62	H	Own	S 53⅜	——	Alem	18x5.25
De Vaux 6-80	Morse	Aut-L	*Aut-L	Borg	W	3	W-F	S	AD ½	4.40	M	†W	S 54¼	Tryon	Al-Z	19x5.25
Dodge Six D L	Chain	Del-R	—	†—	O	3	—— F	—	Own ½	4.60	H	Own	S 54⅞	——	Al-Z	18x5.50
Dodge Eight D K	Chain	Del-R	Del-R	*—	O	3	—— F	—	Own ½	4.10	H	Gem	S 55	——	Al-Z	18x6.00
Essex Terraplane	Gear	Aut-L	*Aut-L	Own	O	3	SM —	S	Own ½	—	Bendix	Gem	S 48	Own	Alem	17x5.25
Essex-Gr. Su. 6	Morse	Aut-L	*Aut-L-S	*Own	O	3	SM-WG-F	S	Own ½	4.63	Bendix	Gem	S 54½	Own	Alem	18x5.25
Ford A	Var-G	Own	*Own	Own	O	3	SM	O	Own ⅝	4.11	M	Gem	S-Tr 39	Own	Al-Z	18x5.25
Ford V8	Var-G	Own	*Own	Own	O	3	SM	O	Own ⅝	4.11	M	Gem	S-Tr	Own	Al-Z	18x5.25
Franklin Olympic	Chain	Del-R	*Del-R-S	Long	WG	3	SM-F	S	Own ½	4.30	H	Ross	El 42	Tryon	Al-Z	17x6.00
Franklin Series 16	Chain	Del-R	*Del-R-S	Br-L	W	3	SM-BW-F	M	Own ½	4.73	H	Gem	El 42	——	Al-Z	19x6.50
Franklin V-12	Chain	Del-R	*Del-R-S	Long	W	3	SM-BW-F	M	Col ½	5.10	H	Ross	S 60	Faf	Al-Z	17x7.50
Graham 6 (1933)	Link	Del-R	Del-R	*Long	WG	3	SM	U	Sal ½	4.55	H	Ross	S 54	ERS	Al-Z	17x6.00
Graham 6	Link	Del-R	Del-R	Long	WG	3	WG-F	U	Sal ½	4.45	H	Ross	S 54	ERS	Al-Z	17x5.50
Graham 8	Link	Del-R	Del-R	Long	WG	3	SM-WG-F	S	Sal ½	4.30	H	Ross	S 54	ERS	Al-Z	17x6.00
Hudson Gr. 8	Morse	Aut-L	*Aut-L-S	*Own	O	3	SM-WG-F	S	Own ½	†4.63	Bendix	Gem	S 54⅛	Own	Alem	*17x6.00
Hupmobile 216	Chain	Aut-L	*A-L-S-‡	Borg	WG	3	SM-WG-F	M	Spic ½	4.54	M	Ross	S 53	Tryon	Al-Z	18x5.50
Hupmobile 222	Morse	Aut-L	*A-L-S-‡	Borg	WG	3	SM-WG-F	U	Own ½	4.36	M	Gem	S 57½	Rub-B	Al-Z	17x6.00
Hupmobile 226	Morse	Aut-L	*A-L-S-‡	Long	D	3	SM-DG-F	U	Own ½	4.36	M	Gem	S 57½	Rub-B	Al-Z	17x6.50
La Salle 345 B	Morse	Del-R	Del-R	Own	O	3	SM	S	Own ¾	4.60	Own M	Sag	S 58	Own	Alem	17x7.00
Lincoln V-8	Chain	Aut-L	*Aut-L	Long	O	3	SM-F	S	Own F	4.58	*Bendix	Own	S 62	Own	Alem	18x7.00
Lincoln V-12	Chain	Aut-L	*Aut-L	Long	O	3	SM-F	S	Own F	4.58	*Bendix	Own	S 62	Own	Alem	18x7.50
Marmon 8	Diam	Del-R	*Del-R	*—	D	3	SM	S	Spic ½	4.08	Bendix	Ross	S 57	Tryon	Alem	18x6.00
Marmon 16	Diam	Del-R	Del-R	Rus	M	3	SM	S	Spic ½	3.78	Bendix	Ross	S 59½	**	Alem	18x7.00
Nash Twin Six	Chain	Aut-L	*A-L-S-‡	Borg	O	3	SM-DG-F	O	Own ½	4.70	M	Ross	S 54	ERS	Alem	18x5.25
Nash Stand. Eight	Chain	Aut-L	*A-L-S-‡	Borg	O	3	SM-DG-F	O	Own ½	4.44	M	Ross	S 54	ERS	Alem	18x5.50
Nash Spec. Eight	Chain	*Aut-L	*A-L-S-‡	Borg	O	3	SM-DG-F	O	Own ½	4.43	Bendix	Gem	S 55¾	*	Bijur	17x6.50
Nash Adv. Eight	Chain	*Aut-L	*A-L-S-‡	Borg	O	3	SM-DG-F	O	Own ½	4.50	Bendix	Gem	S 57½	*	Bijur	18x7.00
Nash Ambas. Eight	Chain	*Aut-L	*A-L-S-‡	Borg	O	3	SM-DG-F	O	Own ½	4.50	Bendix	Gem	S 57½	*	Bijur	18x7.00
Oldsmobile F-32	Chain	Del-R	Del-R	Borg	M	3	SM-DG-F	S	Own ½	4.56	Bendix	Sag	S 54½	Tryon	Al-Z	17x6.00
Oldsmobile L-32	Chain	Del-R	Del-R	Borg	M	3	SM-DG-F	S	Own ½	4.77	Bendix	Sag	S 54½	Tryon	Al-Z	17x6.00
Packard Twin Six	Morse	Aut-L	*Dyn	*Long	O	3	SMF	M	Own ½	4.69	*M	Own	S 60½	Own	Bijur	18x7.50
Packard Stan. 8	Morse	NE	*Dyn	Long	O	3	SM	M	Own ½	4.66	M	Own	S 60½	Own	Bijur	19x6.50
Packard De L. 8	Morse	NE	*Dyn	Long	O	3	SM	M	Own ½	4.66	M	Own	S 60½	Own	Bijur	19x7.00
Packard Light 8	Morse	NE	*Dyn	*Long	O	3	SMF	S	Own ½	4.66	M	Own	S 56	Own	Alem	17x6.50
Pierce-Arrow 54	Chain	Del-R	*Del-R-S	Long	O	3	SM-WG-F	S	Own ½	4.42	Bendix	Ross	S 61	Faf	Myers	18x6.50
Pierce-Arrow 52	Chain	Del-R	*Del-R-S	Long	O	3	SM-WG-F	S	Own ½	4.42	Bendix	Ross	S 61	Faf	Myers	18x7.00
Pierce-Arrow 53	Chain	Del-R	*Del-R-S	Long	O	3	SM-WG-F	S	Own ½	4.58	Bendix	Ross	S 61	Faf	Myers	18x7.00
Plymouth 6	Chain	—	—	Own	O		O-F	O	Own	4.37	H	—	53½	—	—	17x5.25
Pontiac 6	Chain	Del-R	Del-R	Own	M	3	SM-BW-F	M	Own ½	4.55	Bendix	Sag	S 54	Inlox	Al-Z	18x5.25
Pontiac V-8	Link	Del-R	Del-R	Own	M	3	SM-BW-F	M	Own ½	4.22	Bendix	Sag	S 54½	Inlox	Al-Z	17x6.00
Reo Fly. Cloud "S"	Chain	Del-R	*Del-R-S	Long	O	3	SM-F	S	Own ½	4.60	H	Ross	S 55	Tryon	Al-Z	17x5.50
Reo Royale Cust.	Morse	Del-R	Del-R-‡	Long	O	3	SHG	U	Own ½	4.07	H	Ross	S 57½	Own	Far	18x6.50
Reo Royale	Morse	Del-R	Del-R-‡	Long	O	3	SHG	U	Own ½	4.07	H	Ross	S 57½	Own	Al-Z	18x6.50
Reo 8-25	Link	Del-R	*Del-R	Long	O	3	SHG	U	Own ½	4.90	H	Ross	S 55¾	Own	Al-Z	17x6.50
Rockne 6-65	Morse	Aut-L	*Aut-L-S	Borg	WG	3	SM-BW-F	M	Spic ½	4.55	Bendix	Ross	S 54	Tryon	Al-Z	18x5.25
Rockne 6-75	Chain	Aut-L	*Aut-L-S	Long	WG	3	SM-BW-F	M	Own ½	4.73	Bendix	Ross	S 54	Tryon	Al-Z	18x5.50
Studebaker 6-55	Chain	Del-R	*Del-R-S	Long	O	3	SM-BW-F	S	Own ½	4.27	Bendix	Ross	S 54	Tryon	Alem	18x5.50
Studebaker Dict. 62	Cel	Del-R	*Del-R-S	Long	O	3	SM-BW-F	S	Own ½	4.73	Bendix	Ross	S 54	Tryon	Alem	18x5.50
Studebaker Com. 71	Cel	Del-R	*Del-R-S	Long	O	3	SM-BW-F	S	Own ½	4.73	Bendix	Ross	S 56	Faf	Alem	18x6.00
Studebaker Pres. 91	Var-G	Del-R	*Del-R-S	Borg	O	3	SM-BW-F	S	Own ½	4.31	Bendix	Ross	S 60	Faf	Alem	18x6.50
Stutz LAA	Link	Del-R	Del-R	Borg	D	4	——	U	Sal ½	5.10	H	Gem	S 60	Own	Bijur	19x6.50
Stutz SV-16	Link	Del-R	Del-R	Long	M	3	SM	M	Tim ½	4.75	H	Gem	S 62¾	Own	Bijur	*18x7.00
Stutz DV-32	Link	Del-R	Del-R	Long	M	3	SM	M	Tim ½	4.50	H	Gem	S 62¾	Own	Bijur	*18x7.00
Willys-Over. 6-90 A	Link	Aut-L	*Aut-L-S	Own	O	3	SM-F	S	Own ½	4.60	Bendix	Own	S 51	Tryon	Alem	18x5.25
Willys-Over. 8-88 A	Link	Aut-L	*Aut-L-S	Borg	O	3	SM-F	S	Own ½	4.40	Bendix	Ross	S 56	Tryon	Alem	18x5.50
Willys-Knight 66E	Link	Aut-L	*Aut-L-S	Rock	O	3	SM-F	S	Own ½	4.18	Bendix	Ross	S 56	Tryon	Alem	17x6.00

KEY TO ABBREVIATIONS

Weight — ‡Austin standard 2 passenger coupe. Stutz DV 145-inch wheel base weighs 5,352. †Tudor sedan.

Engine make—Con. Continental; Lyc. Lycoming. *Air-cooled with spot temperature control. †Thermo syphon water circulation. ‡Floating power.

Thermostat—Bish-Bab, Bishop & Babcock. Dole, Dole Valve Co., Chicago, Ill.; Ful, Fulton Co.; Har, Harrison; Pines, Pines Winterfront.

Valve arrangement—L, L head; H, horizontal; O, overhead; K, sleeve valve; HO, Horizontal Opposed.

Piston Material—*Alum, aluminum with invar struts. Alum, aluminum alloy CI cast iron. Lo-Ex, Aluminum Corporation of America.

Oil Purifier—Han, Handy; AC, AC Spark Plug Company; Flo, Floato; Cuno, Cuno Engineering Corp.; Pur, Purolator. †Using AC with Floato attachment. **Using both AC and Purolator.

Fuel Cleaner—AC, AC Spark Plug Co.; Ste, Stewart-Warner; Til, Tillotson; V-S, an Sicklen.

Carburetor—Sch, Wheeler Schebler; Zen, Zenith; Mar, Marvel; Car, Carter; Str, Stromberg; DL, Detroit Lubricator; Til, Tillotson; B&B, Ball & Ball; *Designed by Chrysler, made by Carter Carburetor Company.

Air Cleaner—AC, AC Spark Plug Company; AM, Air Maze; Un, United; Til, Tillotson.

Front End Drive—Link, Link Belt; Tex, Texolite; Cel, Celeron; Diam, Diamond Chain; Morse, Morse Chain Company; Var, various makes of chains; Var-G, various makes of gears.

Ignition, Generator and Starter—Aut-L, Auto-Lite; A-L, Auto-Lite; Del-R, Delco-Remy; Dyn, Owen-Dyneto Corp.; N E, North East. *Nash.—Indicates twin ignition. *Bendix starter used. S—Startix equipped. ‡Startix optional equipment.

Clutch—Borg, Borg & Beck; Br-L, Brown-Lipe; Rock, Rockford Machine; Long, Long Clutch Company; Rus, Russell Mfg. Co. *Bendix Clutch Control. †Automatic clutch optional at additional cost.

Transmission Make—D, Detroit Gear; WG, Warner Gear Company; M, Muncie Gear Company; O, Own; W, Warner Corp.

Transmission Type—DG, Detroit Gear & Machine Co.; LGS, The LGS Corp.; F, Free Wheeling; SM, Synchro Mesh; BW Borg-Warner; WG, Warner Gear Co.; SHG, Synchronized Herringbone Gear; O, Own.

Universals—U, Detroit Universal Products; S, Spicer Mfg. Corp.; O, Own; M, Mechanics Universal Joint Company. *Cord using Detroit Universal Products and Mechanical Universal Joint Co.

Rear Axle—Col, Columbia; Sal, Salisbury; Spic, Spicer Mfg. Corp.; Tim, Timken; ½, Semi-flotation; ¾, ¾ floating; F, full floating. †Adams used on custom models.

Ratio—*Dual ratio optional; †Hudson 132-in. wheel base models have rear axle ratio of 5.10.

Brakes — H, hydraulic; M, mechanical; Bendix, Bendix Brake Corp. *Equipped with Vacuum Booster.

Steering Gear—Gem, Gemmer; Ross, Ross Gear and Tool Company; Sag, Saginaw; Say-B, Saylor-Beall Manufacturing Company; W, Warner Corp.; †Ross used on custom models.

Rear Springs — S, semi-elliptic; El, full elliptic; Cant, semi-cantilever; S-Tr, semi-transverse.

Spring Shackles — Tryon, Willys-Morrow Company; Rub B, Rubber Shock Insulator Company; Faf, Fafnir Bearings Company; ERS, Eaton Products, Inc.; Inlox, Inland Mfg. Co. *Own, front. ERS, rear. **Using both Rubber-B and Fafnir.

Chassis Lubricator—Alem, Alemite; Al-Z, Alemite Zerk; Bijur, Bijur Lubricating Corp.; Far, Farval. Myers - Chassis Lubricating Co.

Tires—Auburn 8 custom models equipped with 17x6.00. *Hudson 132-in. wheel base models equipped with tires 17x6.50. Stutz 145-inch wheelbase models have 20x7.00 tires.

ON THE OTHER HAND

10 PLANTS START OPERATION

Boston, Mass., Nov. 16.—Massachusetts Industrial Commission announced today that ten new manufacturing plants began operation and eleven others added to their facilities during September and October in the cities and towns outside Boston.

Among the new plants are the National Tag and Label Corporation, in Marlboro and the Acme Typwriter Ribbon Company of Ware. Plants which have increased their facilities include Academy Hat Works in Fitchburg and the Tiffany Woolen Company and Medway Shoe Company, both of Webster.

STEEL OPERATIONS GAIN

Buffalo, Nov. 16.—Orders for steel have increased sufficiently at the Lackawanna plant of the Bethlehem Steel Corporation to enable the company to make further progress in spreading work over the entire pay roll of 6,500 men, officials of the company stated recently.

Five open hearth furnaces have been in operation for the past three weeks, and about one-third of all the men on the pay roll are at work each day. The increase in production means that every man is working two or three days a week.

There is a possibility, officials said, that an additional open hearth furnace may be lighted this week.

TEXTILE PLANTS RUN 98%

Utica, N. Y., Nov. 16.—Local textile industries have virtually returned to normal, according to a report issued today by the Industrial Association of Utica, with working schedules up to 98 per cent. of normal.

The report is the most optimistic given in 1932 by the association under the direction of John D. Strain, who pointed out that Utica textile factories in October reported the number of men employed at 90.6 per cent. of normal and schedules at 98 per cent. of normal. In September, textiles here reported 81 per cent. employment and 92.6 per cent. working schedule.

HORNING DEFINES RESEARCH WORK

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the shop. Second, I had two matches. This is the case in research when you only have one clue left to work on. Third, I knew that there were lights regularly distributed with lighting cords (this is the atomic table of the physicist), and, if I could get to the first, it would light the way to the next, and so on to the end, and so it happened.

This to me is a perfect analogy of mechanism by which research, starting with a few acts, spreads and reveals, clarifies and pays its way in many returns along the way. There were many places in the shop which would have been very difficult to penetrate, for, in these places, the lights were not controlled by cords, but were on a general circuit, and even after finding the switchboards to these circuits, there were so many that each one would have to be tried to light that particular section. Here again, we have the process of research in its primary aspects, for, in the last resort, we must try everything. Men who fight through to a result, as Kettering, Midgely and Boyd did, are perfect examples of our modern research men. It is one thing to stumble to a valuable fact, but it's another thing to fight your way through to results, using every trick of the mind or intuition to get there. One light leads to another, and it is just that way in research; in fact, finding the far end of the shop was just commonplace research.

Experience has taught that several peculiar things happen during every research project, and one will be sure to run into them:

1. A general hesitation in getting under way. This is the period of gathering facts, and corresponds to the homing pigeon's circular flights of orientation.

2. The tendency to go off on a tangent, or becoming interested in a by-product of the research. It is always hard to keep the research train on the track.

3. The tendency to delay the finish. It seems that bringing a research problem to a conclusion is the most difficult part of the task, and the most value of research is lost at this time.

4. The psychological collapse when the thing is done, for every one loses interest in it, and there is a great delay in following through to the application of an idea.

5. The skepticism of the practical man toward the results of a research.

6. The usual difficulty to get the market and world in general to adopt the results of research.

Most research is really industrial development. I like to make the distinction as follows:

1. Pure research is to attain facts on any situation with no specific application in view and for the sake of the knowledge itself.

2. Applied research is an effort to find the best way of meeting a class of specific problems.

3. Industrial development is an effort to apply the results of pure and applied research to a specific problem for useful gain.

Competition drives most industries to try to understand their individual problems, and it has been found that there is a great stability with companies who carry on research. Merely having a research department does not mean that the company will be stable. Much depends on the quality of research, the guidance, and whether the market likes the product.

The idea that doubling laboratory equipment will double the value of the laboratory product is a great misconception. I believe, after trying it both ways, with little and much equipment, that the value of the work done varies inversely with the value of the equipment. This should not be so, but it accents the value of the mind with just a little help in apparatus. American laboratories are overgrown. It seems to me that we Americans lose sight of the problem in the maize of our equipment. It is a great delight to see many foreign laboratories and to realize the results they get from their meager apparatus. Results depend more on mental equipment than they do on physical apparatus

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H. L. HORNING DEFINES AND ANALYZES RESEARCH WORK

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and there is nothing so rare as a man with a research mind.

We have in our shop a free lance. He reports to our production manager and the chief inspector. He is responsible to me only. He wears no man's yoke, but his allegiance is only to our best interest, and his conscience is his only critic. No one ever sings his praises as a research man. No one asks his title or questions him. He is the supermechanic. When things go wrong and all our high-brow specialists muff the answer, he is there with the goods. Eventually he brings home the bacon. I have watched him work and seen how he does his stuff. The way he beats us all is in the first step, which I pointed out in the beginning. He gets his facts. He takes no one's word for anything. He observes and his eye is better than the brain of twenty research men. He gets the essential fact. His other trick is that he comes through with the analysis and then applies the remedy, and it works. One can't beat that for research, yet no one calls it that. When we are all driven to the wall with a problem I always like to meet him in the shop. He looks for my encouragement, and together we can dope it out. Don't overlook this man in your shop. He will surprise you.

Another of our men noticed that a washer resting on a flat cylinder head of an ell-head engine jumped every time the engine detonated. This led to Midgely's indicator, and Dr. Dickinson's calculation on the pressure in the flame front, and the rate of pressure rise helped to form our theories of detonation and build our business from 25 to 300 engines a day in one model, just because we had learned by research how to soften the effect of a rapidly rising pressure curve.

Don't depend too much on high-brow scientists. Keep your ear open to the man in the shop and on the road. The answer to any research problem isn't particular where it lurks, and often hides under the dirtiest hats.

Some one has said that you can't hurry a research any more than you can hatch eggs ahead of time by using two hens. There is plenty of truth in that, but if the problem is big enough you can split it up into units, each unit to one man, and help them all to go toward an end. Some men get ten times as far in a given time as others.

During the war we had trouble with the main bearings in the Liberty truck engine. Lead in the babbitt produced bubbles. We could not detect them by inspection, but bubbbles showed up after tests were completed. Bearings had to be thrown away and others put in, causing great loss. I had a man make a specific gravity scale, and when we had tested about 100 bearings we sorted them in two piles. The sound ones were easy to distinguish after we had got a great many together. Likewise, the bearings which had blow-holes could be distinguished easily after we had a great number to look at. We did not have to weigh any more. Our inspector picked ten bearings out of 100 and every one showed up bad. In research it is important to bring every factor to one point, for then you can distinguish the vital differences.

Research is like hunting in its essence. In hunting there is a well known rule: Do not look too intently for the object of the hunt. Let the eyes be at ease and rove carelessly and slowly and not too sharply over the woods. You are much more likely to cover the ground more thoroughly than by giving the attention to one object. Don't stare—browse! This applies to the initial stages of research when facts are being gathered. The time to stare is when you have the facts.

In research, much time is lost by not anticipating requirements for equipment and not planning ahead to keeping things coming before the research worker needs them. Research can be scheduled. It may not be manufacturing schedule, but it may save just as much time. Research drags and drags, because it is not planned. Some people wonder how we get things done so quickly in our research laboratory. I find lack of faith in a certain piece of research slows it up more than anything else, except lack of planning.

Many notable achievements have been accomplished in the last few years by the co-operation of entire industries on research problems of wide interest. Such mutual problems as are common between the automotive and petroleum industries have been solved by consent and co-operation. Otherwise their solution would have been delayed for years. Co-operation between the automotive industry represented by the Society of Automotive Engineers, the American Petroleum Institute and the Bureau of Standards has produced a notable piece of research in the field of volatility of gasoline, and has permitted the oil companies to increase their yield, at the same time giving vastly better fuel. The value of increased production and decline in cost to the public can be measured only in hundreds of millions of dollars in the few years it has been in effect. Vapor lock and other problems have been effectively solved.

The value of the Bureau of Standards, lies in the high character of its men, their keen minds, and their neutral position. In co-operative research there must be a man like C. B. Veal, a Judge Landis in the situation, to keep men forever forgetting themselves and their bosses so that a true solution may be attained.

DISCUSSION

Dr. Harvey N. Davis, President Stevens Institute of Technology—Mr. Horning said absolutely nothing that I am not glad to agree with. I like that advice about questioning everything at least once in your life.

A lot of business failures are due to the fact that the executive in charge did not have the research spirit. The spirit of science has been seeping into ever so many branches not ordinarily called science at all—into industry. It is impossible in this day and generation for a man to be really cultured unless that education is shot through and through with this research spirit, as Mr. Horning has called it. I want to corroborate that idea of his that much trouble in business is due to the fact that there was not a scientific-minded man in charge. Development, the drawing out of new methods, bringing out new devices, new products, searching for certain things for certain purposes, is of tremendous importance. That is where dividends are most likely to come from in the immediate future, and fairly regularly. Then there is fundamental research, the kind of research which discloses the fundamental purpose of things. I am inclined to think that industries should be doing more of that as their contribution to the general scientific picture than they have been doing.

Prof. Lichty, Yale University—Mr. Horning's attitude on research is ideal. School is not primarily for research industry, but is an excellent means of developing the process of research. The student launches into the work, lines it up, carries it to a successful conclusion, and seems to have doubly greater power of thinking. Considerable care should be exercised to be sure a research is worth while. Co-operation in research is most beneficial. It keeps us informed regarding problems and methods being used by industry, it advances our knowledge, and it should make us better teachers. While research is essential to the life of an industrial concern, it determines the kind of life a school is going to lead. If a school is not interested in research in some form, it seems to me the result is going to be a slow disintegration.

Dean Barker, Columbia University—In his research Faraday carefully noted not only his positive results but also negative results. He carefully pressed from thinking step by step toward the goal to which he was headed, but in that process carrying each experiment one step further and noting for possible future reference each by-product. If any of you take up research there is a great deal to be learned from that very lesson. We are all too prone to tell of our success.

Sir Ernest Petters, President Petters, Limited, London—We take away with us tonight the idea that nothing is so important as by-products. Every time Mr. Horning tells me something it is something of importance in experience. How he failed to follow the line, the unexpected thing which had happened lost the opportunity of arriving at some great results. We have all had this experience and the lesson is this: take the greatest possible notice of anything unexpected that happens in your research work. Something very simple may lead you into something very great. Consider the development of rustless steel, which has so altered mechanical engineering practice in the last few years. Its development was more or less accidental. We were trying to find some metal which would resist the corrosive action of acids of high explosives, which were wearing out guns in no time during the war. Out of that research came stainless steel, with all its developments.

F. C. Mock, Eclipse Aviation Corporation—You young men just starting out may think we are laying rather heavy emphasis on this research. I could cite you ten instances of where a company either making automobiles or component parts would forge ahead five or seven years just because of one man's ability in research, and, when you come to know such men and their love of work, it seems easy. It is so easy and yet so rare.

(To Be Continued)

Current and Future Developments In Chromium Plating Abroad

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on the cathode with a very weak solution in contact with the cathode. This is followed by partial reduction of chromic ions to chromous ions whereby the deposition of chromium occurs from both chromic and chromous ions.

This reaction is accompanied by the discharge of an abundant amount of hydrogen, but, irrespective of the nature of the electrolyte, chromium deposition is always associated with a considerable evolution of hydrogen. Chromium itself is very easily rendered passive in most electrolytes, even in presence of the halides. Hydrogen discharge tends to give a low current efficiency, but in plating practice, conducted in the usual comparatively small way, this is not of serious account. What is more detrimental is that it impairs the mechanical strength of the deposited chromium. Should there be such a removal of hydrogen ions that the electrolyte is unduly depleted and basic chromium salts are separated out, this would be very deleterious to the results, since it might directly cause a contamination of the deposited metal. With the more modern system of using a solution of chromic acid and chromium sulphate, there is little fear of this trouble arising unless through careless manipulation.

The retardation of chromium depositing because of concentration polarization, which tends to lower the deposition potential, can be largely obviated by keeping the electrolyte in constant circulation. Stirring methods generally are not to be recommended, and more consistent results are secured by causing the electrolyte to flow continuously into the operating tank, either by using a regulation storage tank or by other means.

Although many platers adhered to the theory that cold solutions or solutions at low temperatures are conducive to the existence of a simpler chromium ion, it has been proved in practice that heated electrolytes give the best results. Advantage is taken of the fact that the electrolyte has both to be heated and circulated, and a storage tank is used which is filled and refilled by a small centrifugal pump operated by a mercury switch. The storage tank is lined with lead and furnished with steam coils which raise the solution to the necessary temperature. The electrolyte then flows by gravity to the operating tank, which is also lined with lead, and the circulation is thus maintained.

(To Be Continued)

Sales Leaders and Their Standing in the First 6 Commercial Car Sales Positions by States in October as Compared With September, 1932

OCTOBER, 1932 State	Sales	First		Second		Third		Fourth		Fifth		Sixth	
Arkansas	273	Chev	125	Ford	116	Int	22	Dodge	4	GMC	3	S-W	1
Connecticut	279	Ford	99	Chev.	92	Int.	26	Dodge	15	Reo	9	GMC	8
Delaware	25	Chev.	11	Ford	7	Int.	3	GMC	2	Ind.	1		
Florida	257	Ford	89	Chev.	87	Int.	27	DT	9	Federal	7	Dodge	6
Georgia	203	Ford	101	Chev	68	Int	8	D-F-I	4	G-M	2	R-W	1
Idaho	37	Ford	15	Chev.	14	Int.	7	Reo	1				
Illinois	481	Ford	190	Chev.	159	Int.	53	DT	20	Dodge	18	G-R	9
Indiana	317	Ford	112	Chev.	108	Int.	31	GMC	14	Ind.	13	Dodge	12
Kansas	326	Chev	132	Ford	119	Int	35	GMC	11	DT	10	Dodge	7
Maryland	250	C-F	83	Int	25	Dodge	15	GMC	11	B-DT	7	Reo	5
Michigan	469	Ford	206	Chev.	142	Int.	49	Dodge	26	GMC	15	Stude.	11
Minnesota	335	Chev.	136	Ford	110	Int.	26	Dodge	20	Reo	12	Mack	7
Montana	119	Ford	54	Int.	29	Chev.	23	Reo	4	S-WO	3	D-W	1
New Hampshire	97	Ford	44	Chev	34	Int	5	D-G	3	R-St-WO	2	DT-M	1
North Carolina	511	Chev	262	Ford	180	Int	18	GMC	17	Dodge	16	R-W	3
North Dakota	55	Ford	23	Chev.	17	Int.	9	GMC	3	Dodge	2	Stude.	1
S. Carolina	131	Ford	68	Chev.	52	Dodge	6	I-In-S-W	1				
South Dakota	47	Ford	18	Chev.	13	Int.	9	Dodge	3	DT-S	2		
Utah	50	Chev.	26	Ford	15	D-In	3	Mack	2	GMC	1		
Vermont	51	Ford	29	Chev.	11	Int.	5	DT-D	2	G-R	1		
Virginia	329	Ford	136	Chev.	129	GMC	16	Int.	14	Reo	8	Dodge	6
W. Virginia	163	Ford	74	Chev.	48	Dodge	12	Int.	7	Reo	6	Indiana	5
Wisconsin	228	Chev.	92	Ford	87	Int.	17	Dodge	10	GMC	5	DT-S	3
Dist. of Col.	104	Ford	45	Chev.	23	Int.	8	D-G	7	Autocar	6	Brockway	3

SEPTEMBER, 1932 State	Sales	First		Second		Third		Fourth		Fifth		Sixth	
Arkansas	102	Chev	52	Ford	33	Int	11	Dodge	2	DT-F-G-R	1	—	—
Connecticut	251	Ford	95	Chev.	80	Int.	23	Dodge	16	G-R	10	Federal	5
Delaware	39	C-F	14	Stude.	4	G-R	2	Int.	1				
Florida	189	Ford	88	Chev.	69	Int.	7	Dodge	6	Reo	5	GMC	2
Georgia	250	Ford	116	Chev	76	Int	27	Dodge	9	Ind	6	F-G-S-W	2
Idaho	66	Ford	35	Chev.	20	Int.	5	Dodge	2	Fe-G-R-S	1		
Illinois	767	Ford	440	Chev.	169	Int.	59	Dodge	31	DT	20	Reo	12
Indiana	453	Chev.	181	Ford	148	Int.	41	Dodge	23	GMC	14	Indiana	13
Kansas	254	Ford	146	Chev	142	Int	34	GMC	8	Stude	6	Dodge	4
Maryland	245	Chev	97	Ford	61	Int	30	D-I	10	A-R	7	Mack	6
Michigan	564	Ford	267	Chev.	175	Int.	38	Dodge	21	GMC	17	Reo	16
Minnesota	329	Chev.	134	Ford	118	Int.	33	Dodge	15	DT	11	Stude.	6
Montana	112	Chev.	43	Ford	29	Int.	24	Stude	5	Dodge	4	Autocar	2
New Hampshire	116	Ford	47	Chev	41	Int	8	GMC	4	Dodge	3	DT-M-S	2
North Carolina	402	Chev	225	Ford	129	Int	17	Dodge	8	GMC	6	Indiana	2
North Dakota	94	Ford	34	Chev.	30	Int.	21	GMC	3	Mack	2	DT-D-R-S	1
S. Carolina	128	Ford	54	Chev.	53	Dodge	8	GMC	6	Int.	4	LFR	1
South Dakota	50	Chev.	25	Ford	11	Int.	10	D-G-M-R	1				
Utah	114	Chev.	63	Ford	36	Int.	7	Dodge	5	Stude.	2	GMC	1
Vermont	83	Ford	37	Chev.	34	Int.	6	D-I	2	G-WO	1		
Virginia	390	Ford	191	Chev.	157	Int.	10	D-G	9	Mack	4	White	3
W. Virginia	175	Chev.	76	Ford	69	Int.	8	Dodge	7	Reo	5	GMC	3
Wisconsin	318	C-F	111	Int.	42	Dodge	15	GMC	9	DT	8	R-S	5
Dist. of Col.	114	Ford	51	Chev.	37	GMC	7	D-In	4	Federal	3	Stude.	1

KEY TO ABBREVIATIONS AND SYMBOLS

B—Brockway; C—Chevrolet; D—Dodge; DT—Diamond T; F—Ford; G—GMC; I—Indiana; In—International; LFR—La France-Republic; M—Mack; R—Reo; S—Studebaker; St—Stewart; W—White; WO—Willys-Overland.